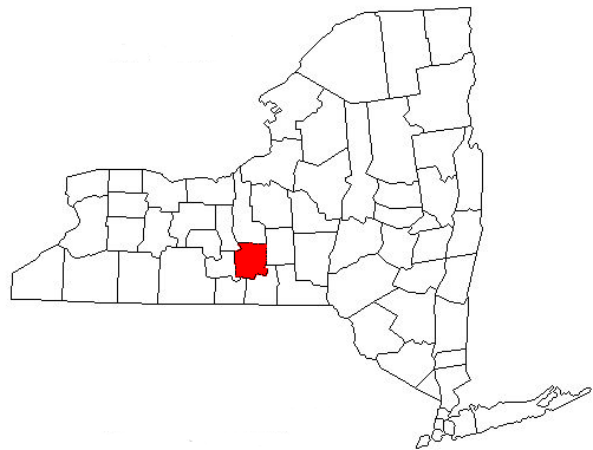


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# **Hunter, Landowner, and Local Resident Viewpoints on the Central Tompkins County Deer Management Focus Area (DMFA)**



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## **HUMAN DIMENSIONS RESEARCH UNIT PUBLICATION SERIES**

This publication is one of a series of reports resulting from investigations dealing with public issues in environmental and natural resources management. The Human Dimensions Research Unit (HDRU) in the Department of Natural Resources at Cornell University studies the social and economic aspects of natural resources and the environment and the application of social and economic insights in management planning and policy. A list of HDRU publications may be obtained by writing to the Human Dimensions Research Unit, Department of Natural Resources, Fernow Hall, Cornell University, Ithaca, NY 14853, or by accessing our World Wide Web site at: <http://www.dnr.cornell.edu/hdru>.



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## **EXECUTIVE SUMMARY**

The Tompkins County Deer Management Focus Area (DMFA) is a 60,000-acre area that includes parts of the towns of Ithaca, Danby, Caroline, Dryden, Lansing, Enfield, Newfield and Ulysses (excluding the city of Ithaca and the villages of Cayuga Heights and Lansing). Hunters with a valid New York State hunting license who register with the DMFA program may take two antlerless deer per day during bow hunting, regular, and late muzzleloader seasons. In addition, a special January season was created, during which hunters with a valid DMFA permit may also take two antlerless deer per day, within the DMFA, with any lawful hunting implement.

There are multiple localities across NYS where conventional hunting approaches have not been sufficient to control deer numbers, and each of these locales are potential sites to test new deer management approaches. Tompkins County was selected to pilot the DMFA designation because programs already underway at Cornell University create unique opportunities to collect evaluative information about the program. The New York Department of Environmental Conservation (DEC) needs evaluative information to determine whether the assumptions on which the DMFA approach is based are valid, and whether the approach has the potential to manage deer populations or deer-related impacts. This study was established to provide that information to DEC. Specifically, the study was designed to evaluate DMFA program outcomes and test underlying management assumptions, so that DEC can make informed decisions about revising, continuing, or expanding the program.

We addressed our study objectives by identifying key management assumptions through discussions with the DMFA program managers, and then by using mail and telephone surveys to gather information from private landowners, other residents, and hunters in the Tompkins County DMFA. Our purpose was to document the degree to which those three groups had enough interest for the DMFA program to be implemented in a way that will reduce negative impacts of deer and increase residents' tolerance for deer. This report describes and synthesizes results from the landowner, resident and hunter surveys.

## **Methods**

### Hunter survey

We implemented a 4-wave mail survey of DMFA hunters in spring of 2014. The survey instrument explored deer hunting background, deer hunting activity within the boundaries of the DMFA, reasons for applying for a DMFA permit, reasons for deer hunting within the DMFA, participation disincentives, and views on deer management in Tompkins County. The first group (hereafter referred to as "1-year participants") (n=518) included all hunters who registered for a DMFA permit in 2012 and completed a DEC log form indicating that they had hunted in the DMFA in 2012/13. The second group (hereafter referred to as "2-year participants") (n=184) included all hunters who registered for a DMFA permit and indicated that they had hunted in the DMFA in both 2012/13 and 2013/14. We received a 59% response from 1-year participants and an 83% response from 2-year participants.

### Landowner survey

In spring of 2014, staff at the Cornell Survey Research Institute (SRI) completed telephone interviews with a sample of 100 area residents who own  $\geq 10$  acres of residential, agricultural, or forest land in the Ithaca, Lansing, Dryden, Groton, Newfield, and Trumansburg school districts. We drew the survey sample from publically available real property tax records for Tompkins County. Key interview questions explored deer hunting activity on private lands within the DMFA, landowner experiences with and concerns about deer-related impacts, perceived barriers or disincentives to participate in DMFA program, perceptions of how DMFA program has affected hunter effort on their land, and beliefs about the program as a deer-management tool.

### Resident survey

We implemented a four-wave mail survey with a sample of 1,250 residents within the Tompkins County DMFA in fall, 2014. The survey instrument assessed participation in outdoor recreation activities, experiences with and concerns about deer-related impacts, awareness of the DMFA program, and beliefs about the program as a deer-management tool. All but one of the questionnaire items had been used in the previous surveys of hunters and/or landowners. The sample was drawn by a commercial supplier (Market Systems Group). The sample excluded residents who were contacted to participate in the landowner or hunter surveys and residents in the City of Ithaca, Village of Cayuga Heights, and Village of Lansing (i.e., areas within the DMFA perimeter where a DMFA permit is not valid). We received a 46% response rate.

## **Key Findings**

### **Hunter Survey**

- Prior access to hunting areas within the DMFA may help to explain multi-year participation in the DMFA program. In 2011, over 40% of all DMFA hunters already had access to private land that was later defined as being within the DMFA. Two-year participants were more likely to have hunted in that geographic area in 2011 or earlier (62% vs. 42%). They also were more likely than 1-year participants to have registered to hunt deer on Cornell University lands in 2011 (37% vs. 9%) and to have hunted on Cornell lands between 2012/13 and 2013/14 (72% vs. 29%).
- The DMFA program attracted avid hunters. DMFA participants had hunted for an average of 25 years and a majority hunted during early archery, regular firearms, and late archery/muzzleloader seasons.
- Two-year participants were more avid deer hunters than 1-year participants. Two-year participants spent more days deer hunting than 1-year participants (9.6 days vs. 3.4 days in 2011/12; 12.6 days vs. 5.7 days in 2012/13; 12.7 vs. 2.7 days in 2013/14).
- DMFA hunters often expressed beliefs consistent with civic purpose or conservation hunting. A majority of DMFA hunters agreed that the deer population in the area should be reduced,

that hunters can reduce deer numbers, and that they themselves were willing to hunt beyond their own needs for venison, hunt in suburban areas, and hunt beyond current season limits (into February).

- DMFA hunters expressed a desire to harvest multiple antlerless deer per year (79% of 1-year and 93% of 2-year participants wanted to take 2 or more antlerless deer per year). Few hunters were actually able to harvest multiple deer, however. In the first year of the DMFA, only 12% of 1-year participants and 31% of 2-year participants took more than 1 antlerless deer. In the second year of the program, only 25% of participants took more than 1 deer.
- Two-year participants reported taking a higher number of antlerless deer than 1-year participants (0.79 deer vs. 0.28 deer in 2011/12; 1.2 deer vs. 0.49 deer in 2012/13; 0.93 vs. 0.21 in 2013/14).
- Respondents reported that their antlerless deer harvest in 2012/13 was about 64% greater than it had been in 2011/2012.
- Differences between the responses of 1-year and 2-year participants hint at reasons why some hunters dropped out after the first year. One-year participants were more likely to have applied for a DMFA permit because they thought the area had landowners who were looking for hunters. For many 1-year hunters, who encountered difficulty getting access to land, that expectation probably was not met. In contrast, 2-year participants were more likely to have applied for a DMFA permit because they wanted to hunt more days and hunt in January. Those expectations were met for most of those participants (most 2-year participants hunted many days and hunted in the January season). The most common reasons why hunters did not apply for a DMFA permit for a second year were: “difficulty getting access to private land in the area” (55%) and “did not see as many deer as expected” (46%).

### **Landowner Survey**

- Private land within the DMFA is divided into many relatively small parcels. A majority of DMFA landowners (75%) owned one to three parcels of land, and 50% owned 33 or fewer acres of land (15% owned 100 acres or more).
- The most common reasons for land ownership were: to provide space/privacy around a home (81%), provide deer hunting for friends and family (75%), and provide other recreation for family members (68%). Privacy was the most important land use for 53% of landowners.
- Many landowners reported that they had been personally affected by deer damage to gardens and plantings around homes (64%), deer-car collisions (60%), and/or Lyme disease (27%). Many were highly concerned about deer-car collisions (41%), Lyme disease (54%), and deer damage to gardens and plantings (45%). Fifty-eight percent of landowners enjoy deer, but worry about problems deer may cause; 15% do not enjoy deer.
- Eighty percent of landowners allowed some deer hunting on their land. Landowners allowed an average of four different hunters on their land per year.

- Landowners reported that hunters harvested an average of three antlerless deer from their property in a typical year. However, about one-third of landowners (representing 25% of the acreage in the sample) reported that no hunting was allowed on their land or no antlerless deer were taken, even if there was hunting.
- Among landowners who allowed deer hunting, 81% did not permit access to a higher number of hunters after the DMFA program was created. The most common reasons for denying access to an increased number of hunters were: reserving hunting privileges for friends and family (71%), lack of trust in unknown hunters (69%), and not wanting strangers on the land (65%).
- Twenty-four percent of landowners said that the total number of deer hunting days that occurred per year on their land (i.e., hunting effort) had increased since the DMFA program was established. Fifteen percent reported that the number of antlerless deer taken from their land had increased since the DMFA program was established.

### **Resident Survey**

- About half (53%) of residents were aware of the DMFA program before being contacted to complete a questionnaire.
- Many residents had been personally affected by deer damage to gardens and plantings around homes (72%), deer-car collisions (51%), or Lyme disease (22%). Many residents were highly concerned about deer-car collisions (46%), Lyme disease (52%), and deer damage to gardens and plantings (36%). Two-thirds of residents (65%) enjoy deer, but worry about problems deer may cause.
- Just over half of residents agreed that deer are preventing regeneration of native plants, while 72% agreed that hunters are capable of reducing deer numbers, and 48% agreed that the DMFA program will reduce the deer population in Tompkins County.
- About half of residents (56% and 54%, respectively) held a favorable opinion toward allowing hunters to take 2 antlerless deer per day, and toward the DMFA program overall. A majority (54%) approved of creating a January deer hunting season in the DMFA (26% had a neutral opinion, 17% held an unfavorable opinion, and 3% were unsure of their opinion). Opinions toward the program overall were favorable even among a majority of residents who often used local trails or walked dogs in natural areas.

### **Conclusions**

Continuing the DMFA program depends in part on public acceptance. We found that about half of residents held favorable attitudes toward the program. At this time, views of residents living in the area where the DMFA program is implemented do not appear to represent an impediment to program continuation. Awareness of the program was low at the time data were collected, however, and it is not known how opinions about the program will be influenced as awareness increases.

The DMFA program can only serve as a deer population management tool if it attracts enough hunters who can effectively take antlerless deer. The deer hunter survey revealed that a small cadre of avid deer hunters is very interested in the opportunities that the DMFA program affords for hunting more days, and in a new January deer hunting season. Hunters demonstrated an interest in and willingness to take multiple antlerless deer, but relatively few were able to achieve those personal harvest goals. Although the establishment of the DMFA resulted in increased deer harvest, we found that the number of hunters who actually removed antlerless deer was low. By the second year of the DMFA program, most hunters who applied for permit in the first year had dropped out of the program because they could not gain access to land, or their expectations about seeing and harvesting deer were not met.

The number of hunters in the program is currently limited by access to private lands for deer hunting. While substantial numbers of private landowners in the area have concerns about negative deer-related impacts, most do not allow new hunters to access their property, either because it would interfere with activities of friends and family, or because the landowner is concerned about the behavior of hunters they do not know or trust. We found that few landowners were willing to welcome new hunters to their land as a means of controlling deer numbers or deer-related impacts. It appears that the desire to have fewer deer is not a sufficient motivation for many landowners to allow deer hunting or increased number of hunters on their lands.

Thus, our findings suggest that the DMFA program is unlikely to control deer numbers consistently across the area unless landowners increase access of their lands to hunters and those hunters who have access increase their success in harvesting antlerless deer.

## **ACKNOWLEDGMENTS**

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Members of the Human Dimensions Research Unit assisted in a variety of ways during the course of this study. Nancy Connelly assisted with sampling strategy and implementation planning. Karlene Smith implemented mailings, coordinated data coding, and completed data cleaning.

The Survey Research Institute (SRI) at Cornell University implemented the telephone survey and completed landowner telephone interviews. SRI staff also completed nonrespondent follow-up telephone interviews with hunters and local residents.

Our survey instruments and request to conduct survey research was reviewed and granted approval by the Cornell University Office of Research Integrity and Assurance (Institutional Review Board for Human Participants Protocol ID# 1006001472).

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## INTRODUCTION

In 2012, the New York State Department of Environmental Conservation (DEC) established a Deer Management Focus Area (DMFA) in central Tompkins County, New York. The DMFA is a 60,000 acre area that includes parts of the towns of Ithaca, Danby, Caroline, Dryden, Lansing, Enfield, Newfield and Ulysses. The city of Ithaca and the villages of Cayuga Heights and Lansing are not included in the program because city and village ordinances in those locales prohibit the discharge of firearms. The DMFA includes two state parks where deer hunting is permitted (Buttermilk Falls State Park, and Robert H. Treman State Park), and a mosaic of private lands [Figure 1]. Cornell University is the single largest landowner in the area (hunting on Cornell lands is by permit only; permits are granted through Cornell, not New York State Department of Environmental Conservation [DEC]).

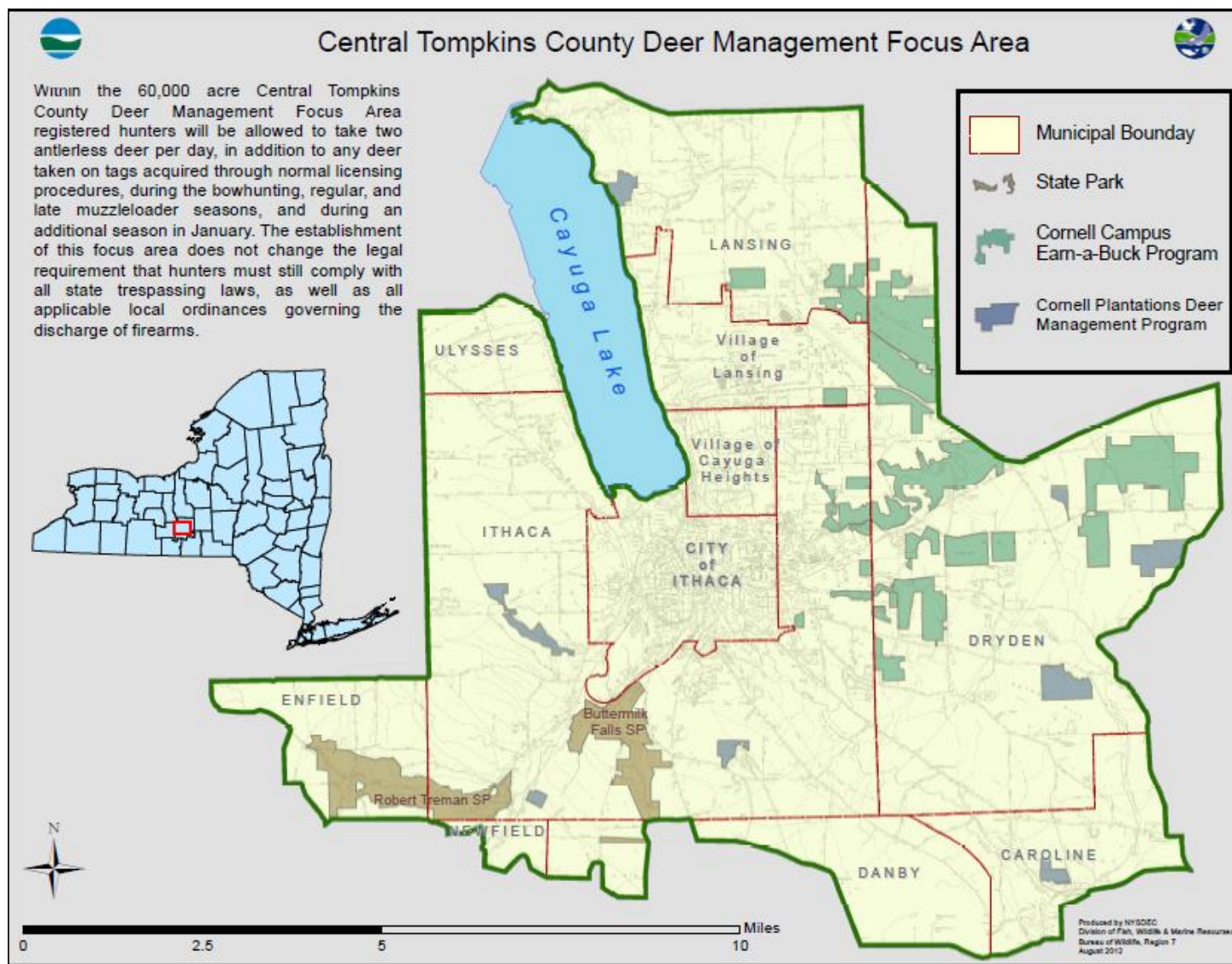
The DMFA designation allows hunters with a valid NYS hunting license who register with the DMFA program to take two antlerless deer per day during the bow hunting, regular, and late muzzleloader seasons. In addition, a special season running from the 2<sup>nd</sup> Saturday in January through January 31 was created, during which hunters with a valid DMFA permit may take two antlerless deer per day in the DMFA with any lawful hunting implement.

### **The problem addressed by the DMFA approach**

Residents and institutional landowners (i.e., Cornell University) in the Tompkins County DMFA contacted DEC seeking relief from multiple negative impacts associated with high densities of deer. The impacts include frequent deer-vehicle collisions, transmission of Lyme disease to people and their pets, damage to domestic plants (e.g., landscape plants, gardens, crop research plots, rare arboretum plantings), lost capacity for forest regeneration, loss of native plant diversity, and spread of invasive, non-native plants. The DEC does provide Deer Damage Permits (DDPs) for landowners to remove deer causing damage, but DEC does not consider the DDP approach to be a good way to get recreational value from the deer resource. As an alternative solution to the deer population issue, DEC established the Tompkins County DMFA.

The DEC 2012-2016 management plan for white-tailed deer in NYS includes six goals (NYSDEC 2011). The DMFA approach is being piloted to address four of those goals in specific localities (including Tompkins County) where conventional hunting approaches have not been sufficient to control deer numbers.

- Goal 1 (population management): manage deer populations at levels that are appropriate for human and ecological concerns;
- Goal 2 (hunting and recreation): promote and enhance deer hunting as an important tradition and management tool in NYS;
- Goal 3 (conflict and damage management): reduce negative impacts caused by deer; and
- Goal 4 (deer habitat): manage deer to promote healthy and sustainable forests and enhance habitat conservation efforts to benefit deer and other species.



**Figure 1.** Boundaries of the Central Tompkins County Deer Management Focus Area (source: DEC).

## Study purpose and objectives

There are multiple localities across NYS where conventional hunting approaches have not been sufficient to control deer numbers. Tompkins County was selected as a test site for DMFA designation because some of the programs already underway at Cornell University create unique opportunities to collect information to evaluate the program. DEC needs evaluative information to determine whether the assumptions on which the approach is based are valid, and whether the approach has potential to manage deer numbers and deer-related impacts. Our study was designed to evaluate DMFA program outcomes and test underlying management assumptions so DEC can make informed decisions about: 1) revising or continuing the Central Tompkins County DMFA, and 2) creating additional DMFAs in other locales. Our study had four objectives:

1. Test key assumptions about landowners, hunters, and residents in the DMFA upon which program success is predicated;
2. Determine the degree to which the DMFA approach piloted in Central Tompkins County is effective in changing private landowners' and other residents' tolerance for deer (establish baseline information on social tolerance for deer to which results from surveys in future years can be compared);
3. Clarify hunter perceptions of the Central Tompkins County DMFA; and
4. Inform decisions about whether the DMFA approach will be continued or expanded.

We addressed our study objectives by identifying key management assumptions through discussions with the DMFA program managers, and then by using mail and telephone surveys to gather information on the attitudes, beliefs, and behaviors of private landowners, other residents, and hunters in the Central Tompkins County DMFA.

## Theory that led to the DMFA approach

Documenting underlying program theory is often a first step in program evaluation. Funnell and Rogers (2011) offer a concise definition of program theory and the utility of clarifying the theory and assumptions behind a program.

*“A program theory is an explicit theory or model of how an intervention, such as a project, a program, a strategy, an initiative, or a policy, contributes to a chain of intermediate results and finally to the intended or observed outcomes. A program theory ideally has two components: a theory of change and a theory of action. The theory of change is about the central processes or drivers by which change comes about for individuals, groups, or communities—for example, psychological processes, social processes, physical processes, and economic processes. ...The theory of action explains how programs or other interventions are constructed to activate these theories of change.*

*...When done well, program theory can produce many benefits. It can develop agreement among diverse stakeholders about what they are trying to do and how, or identify where there are legitimately different perspectives. It can help to improve plans by highlighting gaps and opportunities for collaboration with partners. It can help to set realistic objectives.*



*It can support the development of meaningful performance indicators to track progress and report achievements. It can be used to identify where and why unsuccessful programs are failing or what makes successful programs work, and how they might be reproduced or adapted elsewhere. It can provide a framework to bring together information from many sites, many projects, or many evaluations so that it is possible to learn from the past to improve the future” (Funnell and Rogers, 2011: page 1).*

There are several broad approaches to representing program theory (e.g., program logic models or narratives), which can be used separately or in combination to articulate key beliefs and assumptions associated with a theory of change. Figure 2 depicts the logic model we developed for the program, based on discussions with the DEC contact team that provided oversight for this research. We describe the elements within Figure 2 in the following sections.

### **Inputs**

Implementation of the DMFA program requires an input of DEC Bureau of Wildlife (BOW) staff time for program administration, and time from DEC environmental conservation officers (ECOs) for law enforcement during hunting seasons. Salary for associated staff time is the primary cost associated with program administration.

### **Outputs**

If the inputs (resources) necessary for program implementation are secured and invested, several DEC activities then occur: (1) DEC provides a structure for special hunting opportunities (i.e., a free permit that allows holders to take multiple antlerless deer and to hunt during a January season); (2) DEC central office staff coordinate implementation of the program each year; (3) ECOs maintain conditions for safe and lawful hunting behavior; and (4) DEC staff communicate with potential volunteer agents (i.e., hunters and private landowners), managers of the two state parks within the DMFA perimeter, and local residents to create awareness of the program and annual program outcomes (e.g., number of hunter participants, estimates of deer harvested using a DMFA permit). Through its communication efforts, the agency reaches stakeholder who can accomplish the deer management goals of the program (i.e., hunters and landowners) and others who may be affected by the program, including public land managers in the DMFA and municipal leaders (e.g., mayors, town supervisors, village trustees) with jurisdictions in or near the DMFA.

### **Outcomes**

To achieve its deer management goals, the program must attract strong participation by hunters and private landowners, which will lead to increased hunting effort and take of antlerless deer in the DMFA. After several years of implementation, a successful program would have experienced sustained involvement of hunters and landowners, leading to measureable reduction in the deer population in the DMFA. In theory, as municipal leaders near the DMFA observed measureable results, some would become interested in establishing a DMFA program in their communities. Such interest would lead to requests for additional DMFAs in NYS. The DMFA program would ultimately result in the reduction of negative impacts from deer and an increase in positive impacts where DMFAs are established.

**Situation:** Deer population is increasing in suburban areas. Central Tompkins County DMFA established to pilot test a DEC approach to increasing deer take in suburban areas.

Inputs	Outputs		Outcomes—Impact		
	Activities	Participation	Short Term	Medium Term	Long Term
<b>What DEC invests:</b>  Staff time – BOW, ECOs  Program administration costs	<b>What DEC does:</b>  Provide structure for and coordination of special hunting opportunities (e.g., extended season and bag limits)  Communicate with potential volunteer agents (hunters, landowners), State parks, and residents  Ensure safe and lawful hunter behavior	<b>Who DEC reaches:</b>  Forest and agricultural landowners  Hunters (local and nonlocal)  Area residents  Public land managers  Municipal leaders in focus areas and across NYS	<b>Results in:</b>  Strong hunter involvement  Strong landowner involvement  Increased hunting activity and deer take in focus area	<b>Results in:</b>  Sustained hunter and landowner involvement  Deer population reduction in focus area  More municipal interest in DMFA as a deer management approach  Creation of additional focus areas	<b>Results in:</b>  Reduction in negative impacts (e.g., plant damage, deer-vehicle Collisions)  Increase in positive impacts (e.g., forest regeneration)
<b>Assumptions:</b> <ul style="list-style-type: none"> <li>Many hunters are (1) interested in additional deer hunting opportunity and (2) are willing to take multiple deer.</li> <li>Many landowners (1) perceive negative impacts from deer, (2) want fewer deer on their land, and (3) are willing to give hunters access to take more deer.</li> <li>Majority of local residents will not oppose (1) creation of an extended hunting season or (2) practice of taking multiple deer.</li> </ul>					

**Figure 2.** Logic model for Central Tompkins County DMFA program.

## **Key assumptions**

The theory of change represented by Figure 2 includes several untested assumptions about landowners, hunters, and area residents. The theory assumes that:

- Many private landowners perceive negative impacts from deer, want fewer deer on their land, and are willing to give hunters access to take more deer because removal of deer will lead to reduction in negative impacts associated with deer;
- Sufficient numbers of hunters are interested in additional deer hunting opportunity and are willing and able to take multiple antlerless deer; and
- Generally, local residents will not oppose creation of an extended deer hunting season or rules allowing hunters to take multiple antlerless deer.

The extent to which a DMFA program can reduce deer-related impacts on private lands depends upon the degree to which these assumptions are valid.

## **METHODS**

Cornell University HDRU staff worked with a DEC study contact team to develop instruments for the DMFA hunter, landowner, and resident surveys. All three instruments were reviewed and approved by the Cornell University Office of Research Integrity and Assurance (Institutional Review Board for Human Participants, Protocol ID#1006001472).

### **Hunter Mail Survey**

#### **Survey instrument**

As a first step in questionnaire design, we completed 15 scoping interviews with hunters in Tompkins County in January 2014. We interviewed five hunters that had obtained DMFA permits in both the 2012/13- and 2013/14- hunting license years, five hunters that obtained DMFA permits only for the 2012/13-license year, and five hunters that had never obtained a DMFA permit. We identified interview candidates from two lists of hunters provided by DEC. One list identified a sample of hunters in Tompkins County who had registered for a DMFA permit one or more times. The other list identified a sample of hunters in Tompkins County who did not participate in the DMFA program. We asked participants a series of open-ended questions about their deer-hunting activities, their thoughts on the DMFA program, and their thoughts on public involvement in the process of program development. All interviews were conducted by telephone.

We used information from the scoping interviews to develop a questionnaire with 18 items (79 variables). The questionnaire explored: deer hunting background, deer hunting activity within the boundaries of the DMFA, reasons for applying for a DMFA permit, reasons for deer hunting within the DMFA, disincentives to continue participating in the DMFA program, views on deer management in Tompkins County, and interest in providing input on creation of special deer management areas like the Central Tompkins County DMFA (Appendix A).

## **Sampling approach**

We implemented the hunter mail survey with a census of hunters in two groups that became the strata for the study. Stratum 1 (n=518) included all hunters who registered for a DMFA permit in 2012, and completed a DEC log form indicating that they had hunted in the DMFA in the 2012/13 hunting license year (hereafter referred to as “1-year participants”). Stratum 2 (n=184) included hunters who registered for a DMFA permit in the 2012/13 and 2013/14 license years, and completed DEC log forms indicating that they had hunted in the DMFA in both license years (hereafter referred to as “2-year participants”). The DEC provided access to hunter contact information for purposes of the survey only.

## **Data collection**

We completed all survey mailings between March 20 and April 18, 2014. Following Dillman (2000), we contacted each member of the sample up to four times (an initial letter and questionnaire; a reminder letter; a third reminder letter and replacement questionnaire; and a final reminder letter).

We contracted with the Survey Research Institute at Cornell University (SRI) to conduct telephone surveys with survey nonrespondents. Typically, HDRU conducts a non-respondent follow-up study when the survey response rate is less than 65%. That threshold was exceeded for 2-year participants, so we instructed SRI staff to complete follow-up interviews with a sample of 1-year participant nonrespondents. We provided SRI with contact information for all 1-year nonrespondents and they made calls until completing the target number of 50 interviews in that stratum. SRI staff completed all nonrespondent interviews between May 19 and May 25, 2014.

## **Landowner Telephone Survey**

### **Survey instrument**

We completed 10 scoping interviews with private landowners in Tompkins County during winter, 2014. We interviewed landowners with 2 to 21 acres (n=6), 50-100 acres (n=2), and 400 or more acres (n=2). We asked landowners a series of open-ended questions about deer hunting on their lands, their views on DMFA program, and their views on public involvement in program development.

We used information from the scoping interviews to develop a questionnaire with 34 items (48 variables). The questionnaire addressed: landowner involvement in outdoor activities, nature and extent of deer hunting on private lands within the DMFA, landowner experiences with and concerns about deer-related impacts, perceived barriers/disincentives to participate in the DMFA program, perceptions of how the DMFA program had affected hunter effort on their land, beliefs about the program as a deer-management tool, and preferences related to public involvement in decisions about creating special deer management areas (Appendix B).

## **Sampling approach and data collection**

We drew the survey sample from publically available real property tax records for Tompkins County (35,237 parcels were listed within Tompkins County at the time of our study). Parcels

within the county are identified by size, school district, and road location (no street address is provided). We selected parcels 10 acres or larger in six school districts that covered nearly the entire study area (i.e., the Ithaca, Lansing, Dryden, Groton, Newfield, and Trumansburg school districts), which generated 2,313 parcels of 10 acres or more classified as residential, agricultural, or forest properties. We used a 10-acre minimum parcel size because past studies of hunting access on private lands in New York (Siemer and Brown 1993a, 1993b) had used that cutoff point. SRI staff conducted telephone interviews with a random sample of landowners who had a street address inside the DMFA boundaries. SRI initiated landowner interviews on May 15, 2014, and ended the interviewing period on June 30, 2014 when they reached the target of 100 completed interviews.

## **Resident Mail Survey**

### **Survey instrument**

We developed a resident survey instrument that focused on participation in outdoor activities, experiences with and concerns about deer-related impacts, awareness of the DMFA program, beliefs about the program as a deer-management tool, and preferences related to public involvement in decisions about creating special deer management areas. All but one of the questionnaire items had been used in the previous surveys of hunters or landowners (Appendix C).

### **Sampling approach**

We implemented the DMFA resident survey with a random sample of 1,250 residents of Tompkins County living in the DMFA. A commercial supplier (Market Systems Group) drew the sample. They excluded residents who were contacted to participate in the landowner or hunter surveys and those who lived in the City of Ithaca, Village of Cayuga Heights, and Village of Lansing (areas within the DMFA where a DMFA permit was not valid).

### **Data collection**

We completed all survey mailings between October 15 and November 14, 2014. Following Dillman (2000), we contacted each person up to four times (an initial letter and questionnaire; a reminder letter; a third reminder letter and replacement questionnaire; and a final reminder letter about one week after the third mailing).

## **Analysis**

We used IBM SPSS Statistics 21.0 (SPSS 2012) software to calculate frequencies and measures of central tendency. We grouped respondents for comparison (e.g., hunters were grouped based on years of program participation; landowners and residents were grouped based on program awareness before being contacted for the study). We used the chi-square statistic to test for significant differences between groups at the  $P \leq 0.05$  level.

## RESULTS AND DISCUSSION

### Response Rates and Respondent/Nonrespondent Comparisons

#### Hunter Survey

Hunters returned a total of 445 of 683 deliverable questionnaires, yielding a 59% response rate from 1-year participants and an 83% response rate from 2-year participants (Table 1). One-year participant hunters averaged 47 years old; the average age of 2-year participant hunters was 48. Ninety-six percent of 1-year participants and 97% of 2-year participants were male. One-year participant respondents were more likely than 1-year participant nonrespondents to have hunted in the early archery or muzzleloader seasons; they were not different with regard to: having prior access to private land within the DMFA, whether they had hunted on private lands in the area prior to 2011, or mean antlerless deer harvest per year (Appendix D). We did not adjust the data based on respondent-nonrespondent differences.

#### Landowner survey

Of 318 landowners willing to participate, SRI staff completed interviews with 100 landowners (Table 2); 218 respondents did not own land in the DMFA, making them ineligible for study participation. Most of the completed interviews were with landowners who lived in the Ithaca City School district, the largest school district within the study area (Table 3). Fifty-five percent of landowners who completed an interview were male; they averaged 66 years old.

**Table 1.** Summary of response rates for hunter and resident mail surveys.

	Hunters			Residents
	1-year participants	2-yr participants	Total	
Total sample	518	184	702	1,250
Useable returns	294	151	445	500
Undeliverable	17	2	19	166
Return unusable	5	0	5	3
Return rate	58.7%	83.0%	65.2%	46.1%

**Table 2.** Response outcomes from telephone survey of Tompkins County landowners.

<b>Outcome</b>	<b>Total</b>
Completed survey – within DMFA boundary	100
Willing, but owned land outside DMFA boundary (ineligible)	218
Bad phone number – Not in service	155
Refused to participate	1
Pending – Called less than 6 times without resolution	386
Pending – Inactive (6+ calls without resolution)	10
Total calls made	870

**Table 3.** School districts in which landowner respondents reside.

<b>School district</b>	<b>n</b>
Ithaca City	69
Dryden Central	16
Lansing Central	7
Trumansburg Central	5
Newfield Central	2
Groton Central	1

### **Resident survey**

Residents returned a total of 503 of 1,084 deliverable questionnaires (46% response) (Table 1). Fifty-three percent of respondents to the resident survey were male; 47% were female. The mean age for responding residents was 59 years old.

We detected a number of differences between respondents and nonrespondents (Appendix E). Respondents expressed higher levels of concern about deer-car collisions, gardens/plantings around the home, and Lyme disease. Respondents also had less favorable opinions regarding: (1) the ability of the DMFA to help control deer in Tompkins County, (2) allowing hunters to take 2 antlerless deer, and (3) the DMFA program overall. Respondents were more interested in providing input on DMFA program design. For variables on which data were collected in nonrespondent telephone interviews, we weighted the data to adjust for respondent-nonrespondent differences.

## Key Findings: Hunter Survey

### Hunting experience in the DMFA

We tested assumptions that hunters were interested in additional hunting opportunities in the DMFA and were willing to take multiple deer per season. We found that many hunters were interested in additional hunting opportunities. We also found that hunters were interested in taking additional deer, but in reality most were unable to do so.

Program managers for the DMFA wanted to learn what types of hunters would be attracted to, and retained in, the program. Hunters in both sample strata had been deer hunting in New York for approximately 25 years, on average. The majority of program participants hunted during the early archery, regular firearms, and late muzzleloader/early archery seasons (Table 4). Hunters in both strata participated in the 2013 early archery and regular firearms deer hunting seasons at about the same rate. Two-year participants were more likely than 1-year participants to have participated in the 2013 late muzzleloader/archery season (76% vs. 65%;  $\chi^2_1 = 5.382$ ;  $P = 0.020$ ) (Table 4). These findings suggest that multi-year participants were generally more avid hunters than single year participants.

**Table 4.** Hunting activity traits of DMFA program participants.

	1-year participants		2-year participants	
	<i>n</i>	% Yes <sup>1</sup>	<i>n</i>	% Yes
<i>Seasons hunted in 2013</i>				
Regular firearms season	292	91.1	151	95.4
Early archery season	292	74.7	151	82.1
Late muzzleloader/archery season	292	<b>65.4<sup>a</sup></b>	151	<b>76.2<sup>a</sup></b>
<i>DMFA participation</i>				
Registered for DMFA permit fall 2012 or Jan 13	247	98.0	143	98.6
Hunted in DMFA Oct 2012 - Jan 2014	289	<b>92.0<sup>c</sup></b>	150	<b>100<sup>c</sup></b>
Hunted on lands that became DMFA in 2012 or earlier	292	<b>41.8<sup>b</sup></b>	151	<b>62.3<sup>b</sup></b>
Registered for DMFA permit fall 2013 or Jan 14	212	<b>23.1<sup>d</sup></b>	142	<b>100<sup>d</sup></b>
<i>Land hunted within DMFA in 2012/13 and 2013/14</i>				
Private land, not Cornell	225	60.0	127	60.6
NYS Parks land	220	<b>42.3<sup>f</sup></b>	115	<b>23.5<sup>f</sup></b>
Cornell	207	<b>28.5<sup>e</sup></b>	130	<b>72.3<sup>e</sup></b>

<sup>1</sup> Results in bold with the same superscript were significantly different at  $P = 0.05$  level.



## Hunting in the area that became the DMFA in 2012

Prior permission to hunt deer on private land in what later became the DMFA may help explain a portion of multi-year participation in the DMFA program. Two-year participants were more likely to have hunted in central Tompkins County in 2011 or earlier (prior to the area being designated a DMFA) (62% vs. 42%) (Table 4). They also were more likely than 1-year participants to have registered to hunt on Cornell lands in 2011 (37% vs. 9%) (Table 5) and to have hunted on Cornell lands between 2012/13 and 2013/14 (72% vs. 29%) (Table 4). In 2011, similar proportions of 1-year and 2-year DMFA participants had permission to access private lands that later were within the DMFA boundaries (41% of 1-year participants vs. 45% of 2-year participants) (Table 5). Two-year participants were less likely to have hunted on NYS Park lands within DMFA boundaries in 2012 or 2013 (prior to it being designated a DMFA) (24% vs. 58%) (Table 4).

## Reasons for deer hunting within the DMFA

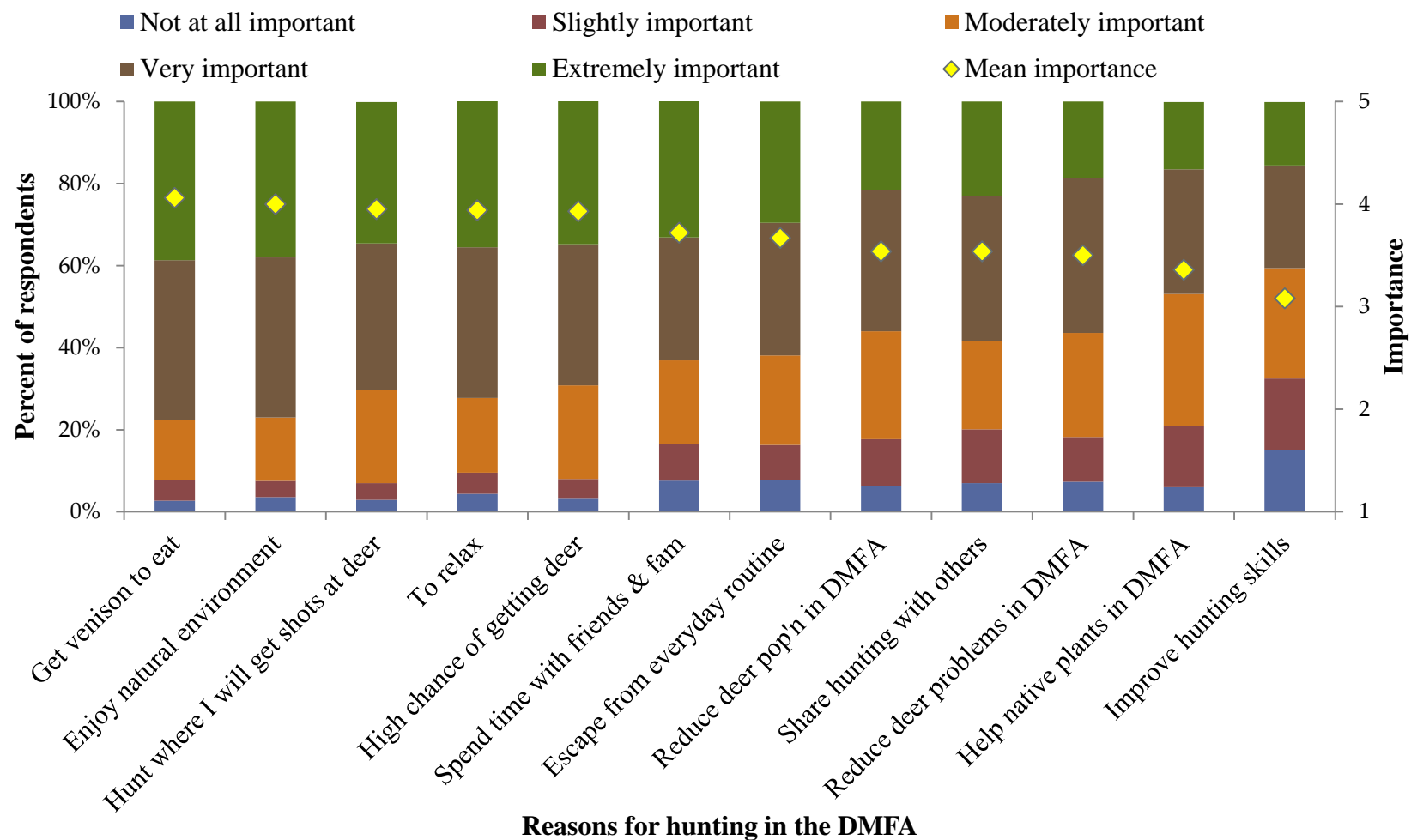
We asked hunters about the importance of 12 factors that might motivate someone to hunt on lands within the DMFA (Figure 3). All 12 factors were important to hunters, and 1-year and 2-year participants did not differ on importance ratings for 11 of the factors (2-year participants did place higher importance on helping to reduce deer damage to native plants [ $\chi^2_4 = 11.098$ ;  $P = 0.025$ ]).

We know from past research that committed hunters have a broad range of motivations (Decker et al. 1980, 1984, 1987; Decker and Connelly 1989; Siemer et al. 2011). The hunters who responded to this survey demonstrated that pattern, placing importance on appreciative, affiliative, achievement, and a few conservation recreation, or civic purpose motivations. The most important reasons for hunting within the DMFA were: having a chance to get venison, doing something where I can enjoy the natural environment, having a chance to hunt where I am likely to see and get shots at deer, having a chance of getting a deer, and doing something that helps me relax and refresh my mind (Figure 3).

**Table 5.** Deer hunting access in 2011 (before the DMFA was established).

Hunting access	1-year participants		2-year participants	
	<i>n</i>	% Yes <sup>1</sup>	<i>n</i>	% Yes
Had access in 2011 to hunt deer on private land that is now included in the DMFA	234	41.0	137	45.3
Was registered to hunt deer on Cornell University lands in 2011	217	<b>8.8<sup>a</sup></b>	134	<b>37.3<sup>a</sup></b>
Hunted deer in Buttermilk State Park in 2011	216	6.9	125	4.8
Hunted deer in Robert Treman State Park in 2011	214	5.1	126	6.3

<sup>1</sup>Results in bold with the same superscript were significantly different at  $P = 0.05$  level.



<sup>1</sup>Importance level: 1=not at all important; 2=slightly important; 3=moderately important; 4=very important; 5=extremely important

**Figure 3.** Reasons to hunt deer in the DMFA.

### **Reasons hunters applied for a DMFA permit**

We asked hunters how much importance they placed on 11 possible reasons to apply for a DMFA permit (Figure 4). Of the 11 reasons we listed, the top-ranked motivation to apply for a DMFA permit was to hunt in an area with a high deer population ( $\bar{x}$  1-year = 3.88;  $\bar{x}$  2-year = 3.80). A comparison of the survey strata on the four most important reasons to apply for a DMFA permit leads to some hypotheses about why 1-year participants did not apply for a permit for a second year. Both 1-year and 2-year participants were attracted to the DMFA area because it had a high deer population. One-year participants placed higher importance on being in an area where landowners were looking for more deer hunters (3.87 vs. 3.34,  $p < .05$ ), an assumption that probably was not valid in many cases, based on findings from our landowner survey. Two-year participants were more likely than 1-year participants to have applied for a permit because it would allow them to hunt more days, and because it would allow them to hunt in January.

For 1-year and two- year participants, getting additional antlerless deer harvest tags was a weaker motivation to apply for a DMFA permit than gaining the opportunity to hunt more days each year. That pattern was most pronounced for two-year participants.

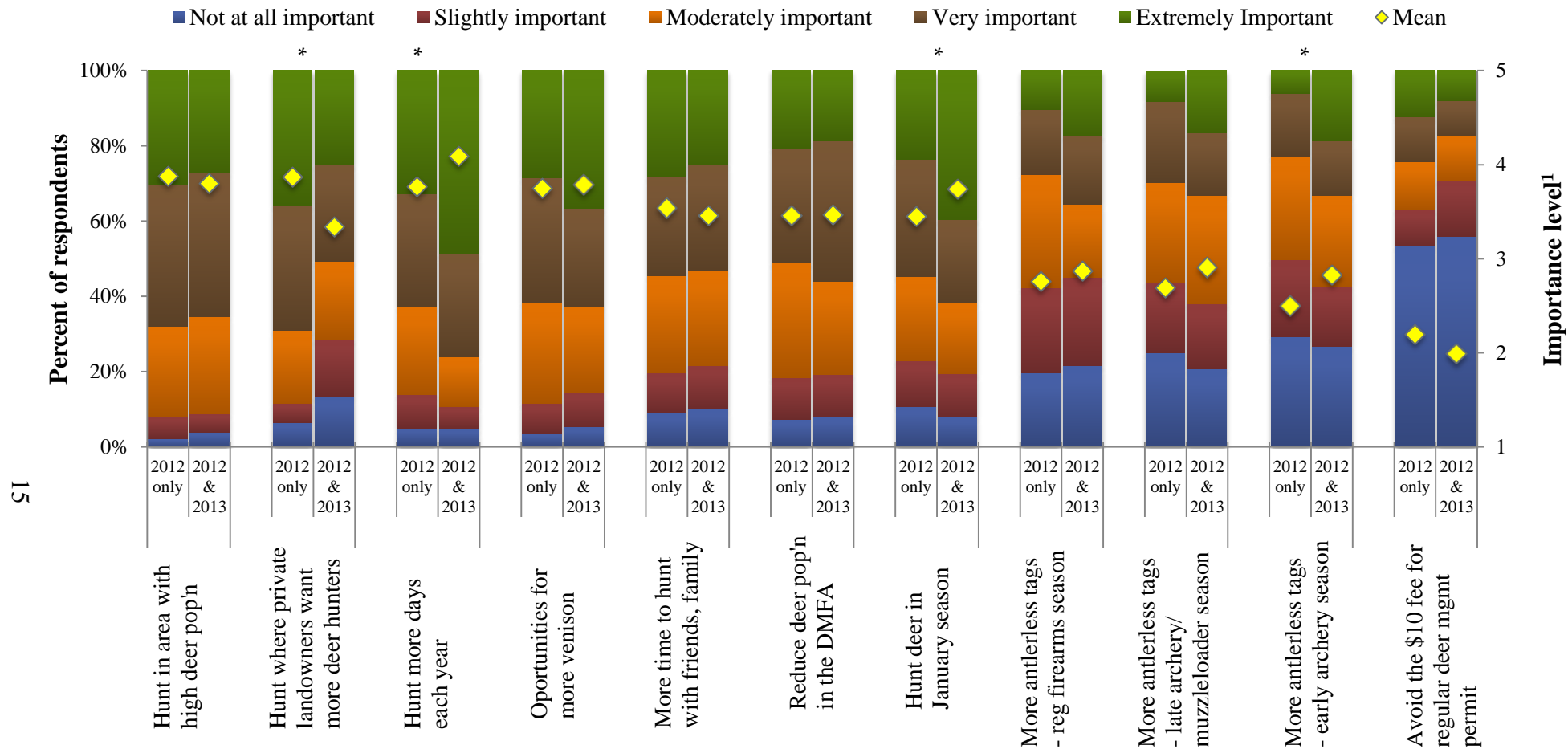
### **Hunting during the January season**

Hunters, especially two-year participants, showed a strong interest in the January deer-hunting season in the DMFA. Seventy-seven percent of 2-year participants hunted at least once in the 2014 January season. Ninety-four percent of those who planned to apply for a DMFA permit in 2015 also planned to hunt in the January 2015 season. Sixty-one percent of 1-year participants planned to apply for a DMFA permit in 2015, and 95% of those planned to apply for a DMFA permit plan to hunt in the January 2015 season. These results suggest an extended deer-hunting season may be an important motivation to participate in the DMFA program.

### **Reasons hunters may not apply for a DMFA permit**

The most common reasons why hunters may not apply for a DMFA permit in future years were: difficulty in getting access to private land in the DMFA, failure to see as many deer in the area as expected, and living too far from the DMFA for it to be convenient (Figure 5). Frustration over difficulty in gaining access to private land in the DMFA also appeared in comments hunters offered after completing their questionnaire (Appendix F, Table F1) and in the open-ended “other” category on some items (Appendix F, Table F3).

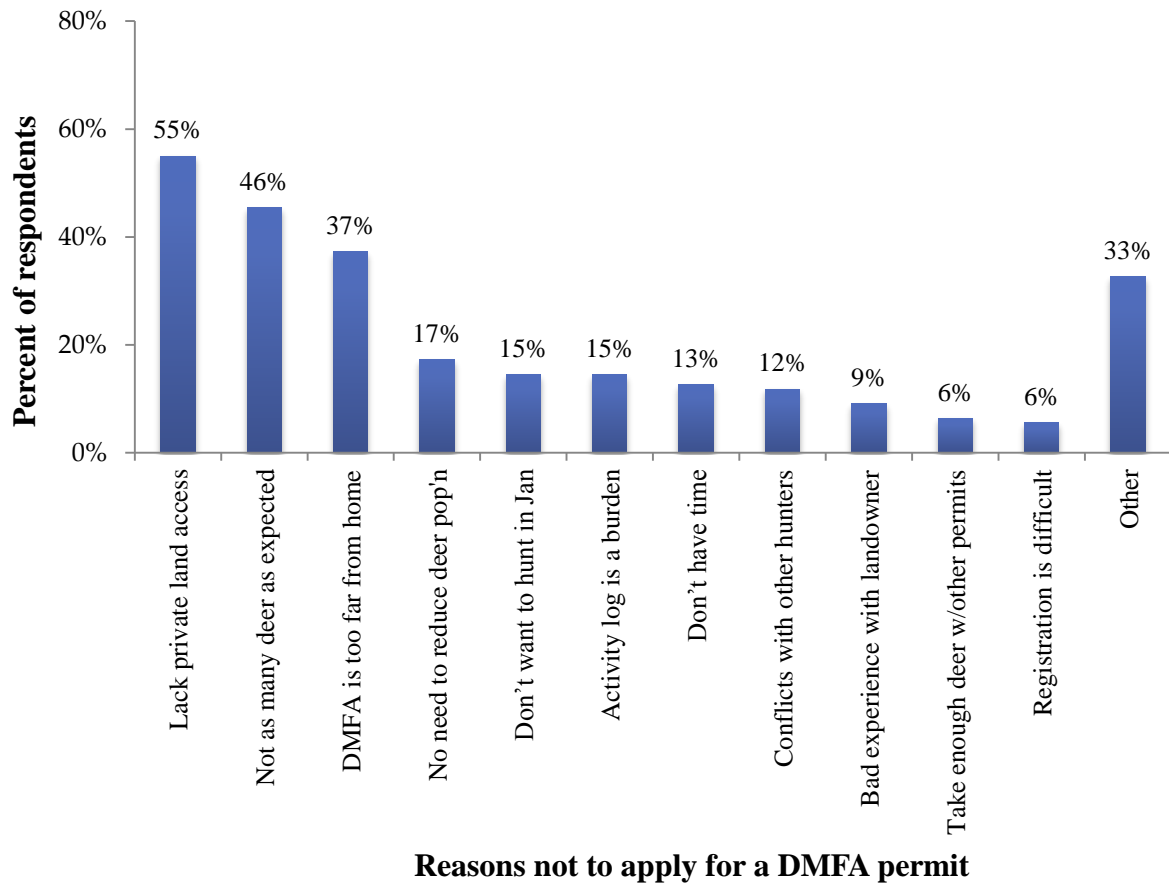
Hunter satisfaction is a function of whether hunters’ expectations are met. Two-year participants were more likely than 1-year participants to have met or exceeded their expectations related to encountering deer and gaining access to private land (Table 6). That those expectations were met may help explain why some hunters continued to participate in the program while others did not.



<sup>1</sup>Importance level: 1=not at all important; 2=slightly important; 3=moderately important; 4=very important; 5=extremely important

\* Results between strata were significantly different at p = 0.05 level

**Figure 4.** Reasons hunters applied for a DMFA permit.



**Figure 5.** Reasons hunters may not apply for a DMFA permit.

**Table 6.** Assessment of whether DMFA hunting experience expectations were met.

	Number of deer encountered in DMFA in the last year respondent hunted <sup>a</sup>				Ability to access private land in DMFA in last year respondent hunted <sup>b</sup>			
	<i>1-year participants</i>		<i>2-year participants</i>		<i>1-year participants</i>		<i>2-year participants</i>	
	n	%	n	%	n	%	n	%
Better than expected	19	7.9	10	7.0	12	5.3	8	5.7
About what was expected	81	33.8	70	49.0	65	28.6	69	48.9
Worse than expected	123	51.2	59	41.2	94	41.4	32	22.7
Unsure	17	7.1	4	2.8	56	24.7	32	22.7

<sup>a</sup>  $\chi^2 = 0.102$ , df = 3, P = 0.017

<sup>b</sup>  $\chi^2 = 18.908$ , df = 3, P < 0.001

## **Attitudes towards deer management in the DMFA/Tomkins County**

We asked hunters several questions to determine their beliefs about deer hunting for the purpose of reducing deer numbers and problems associated with deer. Hunters who are willing to hunt for the civic purpose of reducing the local deer population have been characterized as conservation recreationists or civic purpose hunters (Siemer et al. 2012). We found that many respondents held attitudes consistent with civic-purpose hunting. A majority of hunters agreed or strongly agreed with six of seven deer management statements in the questionnaire. Most DMFA permit holders agreed that the deer population in the DMFA area should be reduced, that hunters were capable of reducing deer numbers in the area, that they were willing to hunt beyond their own venison needs, and that they were willing to hunt in suburban areas where they might be visible to nonhunters. Two-year participants were more likely than single-year participants to agree that deer were preventing regeneration of native plants, that they were willing to take more deer than they need for personal consumption, and that they were willing to hunt deer through February (Figure 6). Two-year participants were less likely than 1-year participants to support creation of an antlerless deer-only season in September (Figure 6).

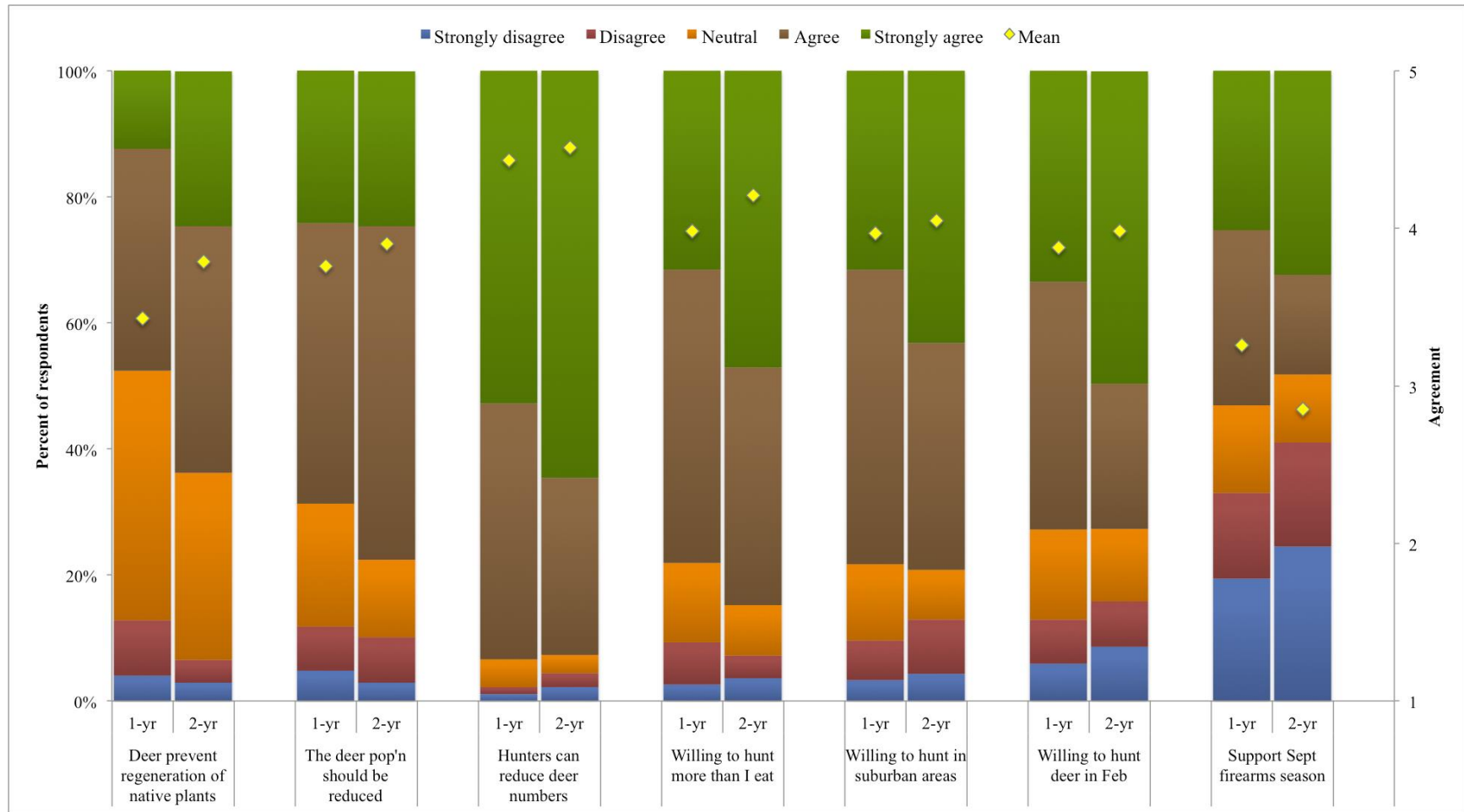
### **Deer hunting effort and antlerless deer take**

Hunters reported that the number of days they went deer hunting within the DMFA increased in the first year of the program (2012/13). Two-year participants continued to hunt more days per year in 2013/14 than they had in 2011/12 (Table 7).

In general, 2-year participants wanted to harvest more antlerless deer than 1-year participants (mean number of deer desired 4.1 vs. 3.0;  $t = -2.753$ ;  $df = 374$ ;  $P = 0.006$ ). The majority of 1-year participants (58%) wanted to harvest two deer or less, while the majority of 2-year participants (63%) wanted to harvest three or more antlerless deer per year (Figure 7). Though many program participants wanted to take multiple antlerless deer, only a small proportion of participants did so (Figure 8). Two-year participants took more antlerless deer per year than 1-year participants in the first year of the program (Figure 8). In the second year of the program (2013/14) hunters reported a higher rate of antlerless deer harvest than they had in 2011/12, but not as high a rate as they reported in 2012-13 (Figure 8).

We estimate that antlerless deer take among hunter survey respondents increased from 290 in 2011/12 to 475 in 2012/13. That estimate represents a 64% increase in antlerless deer take in the area that became the DMFA. The increase of 185 above the 2011/12 total suggests an increased take of approximately 2 antlerless deer/mi<sup>2</sup>.

We also compared antlerless deer harvest among respondents who had a DMFA permit in 2012/13 and 2013/14. Antlerless deer harvest among two-year participants increased from 145 in 2011/12 to 221 in 2013/14. That estimate represents a 52% increase in antlerless deer take in the area that became the DMFA. In 2013/14, two-year participants harvested 172 antlerless deer, a 19% increase over their harvest level in 2011/12. That represents an increase of 27 above the 2011/12 total for two-year participants, or an increase of 0.28 antlerless deer/mi<sup>2</sup>.

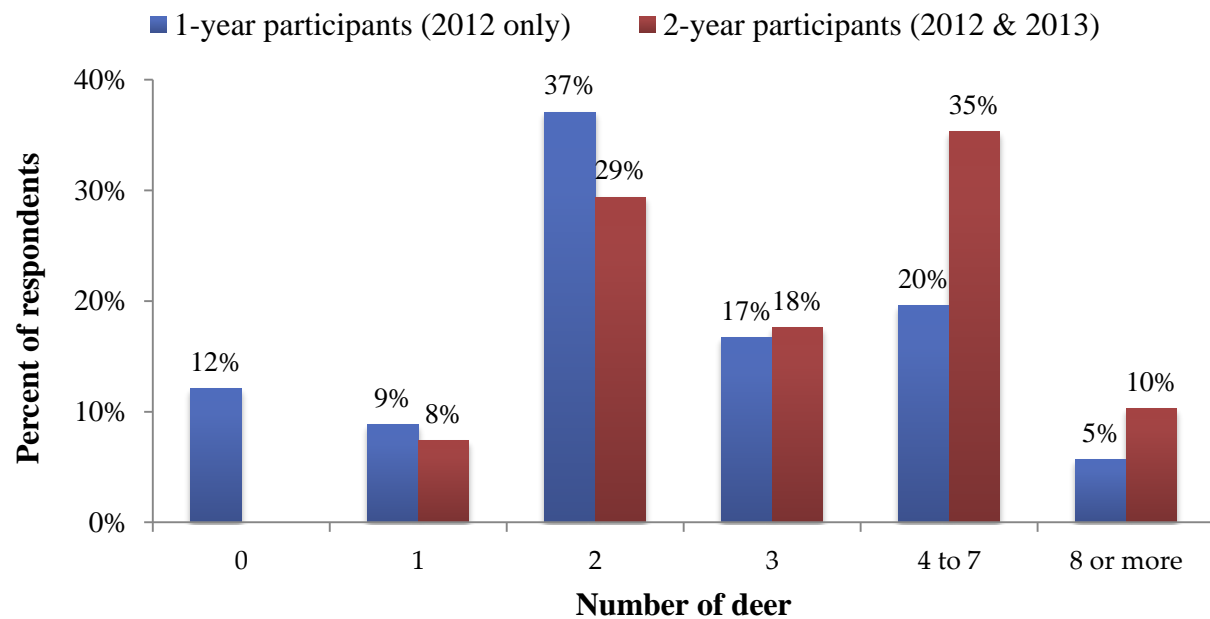


<sup>a</sup>Agreement: 1=strongly disagree; 2=disagree; 3=neutral; 4=agree; 5=strongly agree

**Figure 6.** Hunter attitudes towards hunting and the deer population in the DMFA.

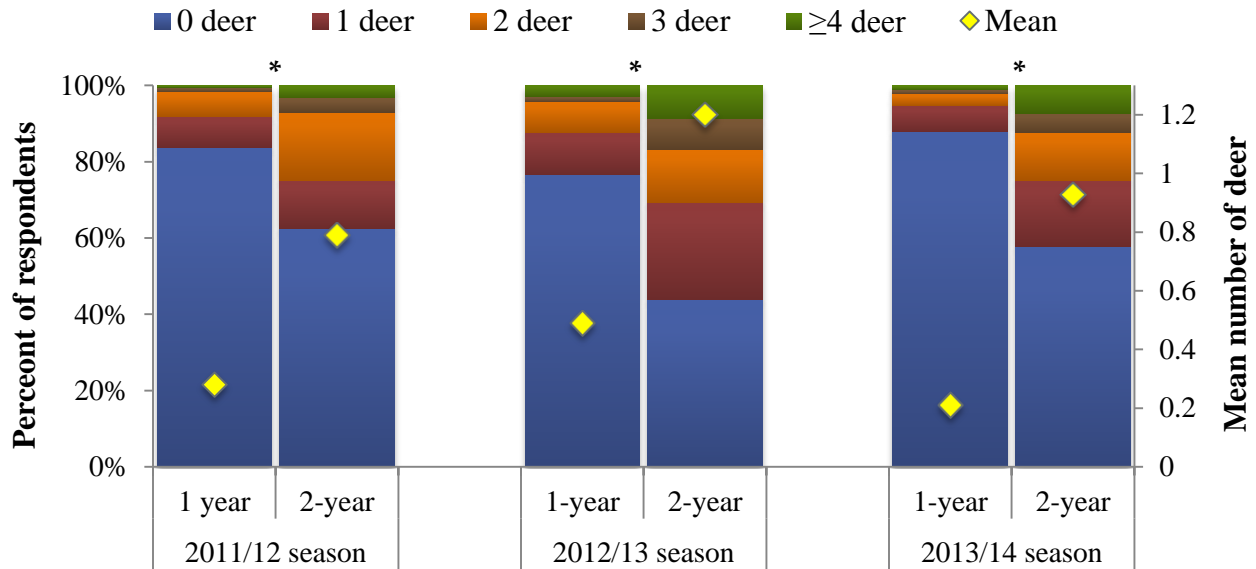
**Table 7.** Mean number of days per season that hunters hunted for deer in the DMFA.

<b>Deer hunting license year</b>	<b>n</b>	<b>mean</b>	<b>SE</b>	<b>t</b>	<b>df</b>	<b>p-value</b>
<i>October 2011 to December 2012</i>						
1-year participants (2012 only)	196	3.37	0.442	-5.353	316	<0.001
2-year participants (2012 and 2013)	122	9.64	1.304			
<i>October 2012 to January 2013</i>						
1-year participants (2012 only)	240	5.73	0.416	-6.736	372	<0.001
2-year participants (2012 and 2013)	134	12.64	1.156			
<i>October 2013 to January 2014</i>						
1-year participants (2012 only)	202	2.69	0.429	-8.281	333	<0.001
2-year participants (2012 and 2013)	133	12.70	1.340			



**Figure 7.** Number of antlerless deer hunters wanted to take in 2014-15 hunting season.





**DMFA participation by deer hunting season**

\*Indicates significance differences at  $p < .001$

**Figure 8.** Number of antlerless deer taken in the DMFA per hunting season.

## Key Findings: Landowner Survey

### Parcel size and land-use characteristics

The majority of private landowners we surveyed owned few parcels and 50 or fewer acres. Over half (56%) of landowners owned just 1 parcel of land and 75% owned 1-3 parcels (range 1 to 51; mean 3.86 parcels) (Table 8). About half (52%) of respondents owned 33 or fewer acres; only 18% owned 100 acres or more (range 11 - 500 acres; mean 74 acres) (Table 9). The fact that most private land parcels are small is a physical constraint that limits the number of hunters that can be accommodated by any single landowner within the DMFA.

Most landowners (90%) lived on their property year-round. The most common land-uses were: to provide privacy and space around the landowners' home (81%), deer hunting by friends and family (75%), and use for other kinds of family recreation (68%). Privacy and other kinds of family recreation were cited most often as the most important land uses (Table 10).

### Deer-related experiences and impact perceptions

We asked questions about how deer impacted the lives of both landowners and residents. The questions were designed to determine if landowners and residents were experiencing negative impacts from deer; the results indicate that many of them were. Eighty-four percent of landowners had moderate or high concern about Lyme disease, and many also had high concern

**Table 8.** Number of parcels > 10 acres owned by landowner respondents.

# parcels owned	n	%
1	56	56.0
2	11	11.0
3 to 5	18	18.0
6 to 10	10	10.0
11 or more	5	5.0

**Table 9.** Number of acres owned by landowner respondents in the DMFA (only parcels > 10 acres included).

Number of acres owned	n	%
11 – 20	25	25.2
21 – 30	20	20.2
31 – 50	22	22.2
51 – 70	7	7.1
71 – 99	7	7.1
100 – 199	11	11.1
200 – 500	7	7.1

**Table 10.** Uses of private land in the DMFA.

Land uses	Use land this way (%)	Most important uses of land (%)
Privacy or space around your home	81	53
Deer hunting by friends and family	75	23
Other kinds of personal or family recreation	68	52
Growing agricultural crops or livestock	51	39
Growing forest products	39	13
Investment or commercial purposes	26	17

about deer-car collisions and deer damage to gardens and landscape plantings. Among the impacts listed, landowners were most likely to have experienced deer damage to gardens and landscape plants and deer-car collisions (Table 11).

Based on their deer population preferences, tolerance for deer-related problems had been exceeded for many landowners. Fifty-eight percent of landowners worried about problems deer may cause (Table 12) and wanted the deer population on the lands they own in Tompkins County to decrease (35% wanted the deer population on their lands to stay about the same; 4% wanted the deer population on their land to increase) [Table 13]. Nevertheless, not all landowners said it was important to reduce deer numbers on their lands; even some landowners that worried about deer-related problems did not prefer a deer population decrease (Tables 12 and 13).

### **Attitudes toward and beliefs about the DMFA program**

About half of landowners were aware of the DMFA before being interviewed. Program awareness was higher among landowners who allowed some deer hunting (Table 14). A majority (68.7%) of landowners who allowed hunting had a favorable opinion of the DMFA program. Approval of the program was higher among landowners who were aware of the program before being called for an interview (Table 15). The majority (66%) of landowners who allowed hunting agreed that the DMFA program will help reduce the deer population in central Tompkins County. Landowners who allowed hunting had mixed beliefs about whether the longer hunting season and higher bag limit will lead to greater harvest of antlerless deer on their land in the future; 52% believed it was likely or very likely to do so; 37% believed that outcome was unlikely (Figure 9).

The majority (60%) of landowners who did not allow deer hunting still preferred that the deer population decrease on their land (40% of those who did not allow deer hunting wanted the population to remain about the same; none wanted the population to increase) (Figure 10). This discrepancy implies that a desire to have fewer deer is not a sufficient motivation for these landowners to allow deer hunting on their lands.

Sixty-seven percent of landowners posted their land with signs to prohibit hunting. However, 80% allowed some hunting on their land. These results are consistent with findings from past landowner studies, in that surveys typically reveal that landowners who post their lands against trespass do allow some hunting by friends and family (Siemer and Brown 1993a, 1993b, 1998).

### **Nature and extent of deer hunting on private lands in the DMFA**

Twenty percent of landowners did not allow *any* deer hunting to occur on their property in Tompkins County. The most common reasons for prohibiting hunting were: concern that deer hunting would be unsafe (75%), a desire not to have strangers on the property (65%), concern about liability for hunters injuries (45%), and concern that deer hunting would interfere with other fall activities (35%) (Figure 11). These are familiar concerns that have been identified repeatedly in private land access studies in New York State (Siemer and Brown 1993a, 1998).

**Table 11.** Concerns about and experience with human-deer interactions among landowners and residents in the DMFA.

Interactions	n	$\bar{x}$	Level of concern <sup>a</sup> (%)					Affected <sup>b</sup> (%)	Moderate + High Concern (%)	
			1	2	3	4	5			
<i>Lyme disease</i>										
Landowners	100	3.4	9.0	5.0	30.0	54.0	2.0	27	84	
Residents	567	3.4	4.9	12.4	27.5	52.0	3.2	22	80	
<i>Deer-car collisions</i>										
Landowners	100	3.0	12.0	15.0	31.0	41.0	1.0	60	72	
Residents	568	3.3	5.5	10.0	37.5	46.2	0.8	51	84	
<i>Deer damage to gardens and plantings around homes</i>										
Landowners	100	3.0	19.0	12.0	23.0	45.0	1.0	64	68	
Residents	568	2.9	15.4	22.2	25.2	36.5	0.7	72	62	
<i>Deer damage to crops</i>										
Landowners	100	2.7	24.0	19.0	24.0	29.0	4.0	24	53	
Residents	479	2.8	11.3	28.0	32.2	24.6	4.0	6	57	
<i>Deer damage to plants and forests</i>										
Landowners	100	2.6	32.0	11.0	22.0	32.0	3.0	35	54	
Residents	566	2.9	18.9	20.3	25.4	25.9	9.4	28	51	

<sup>a</sup>Concern level: 1=no concern; 2=low concern; 3=moderate concern; 4=high concern; 5=unsure

<sup>b</sup>Percent of respondents who have been personally affected by this problem

**Table 12.** Landowners' and residents' attitudes toward deer in Tompkins County, by relative importance they placed on reducing problems that deer cause.

Attitude towards deer in Tompkins County	Importance of reducing the problems that deer cause					
	Not or slightly important (%)		Moderately or very important (%)		Total (%)	
	Landowners (n=37)	Residents (n=144)	Landowners (n=63)	Residents (n=396)	All Landowners (n=100)	All Residents (n=569)
I have no particular feelings about deer	0.0	4.2	3.2	1.2	2.0	1.9
I enjoy deer AND I do not worry about problems deer cause	59.5	72.2	4.8	2.0	25.0	19.8
I enjoy deer BUT I worry about problems deer cause	40.5	23.6	68.2	78.8	58.0	65.1
I do not enjoy deer in Tompkins County	0.0	0.0	23.8	18.0	15.0	13.1

**Table 13.** Landowners' and residents' attitudes towards deer in Tompkins County, by relative importance of deer populations on land they own (landowners) or in general in the County (residents).

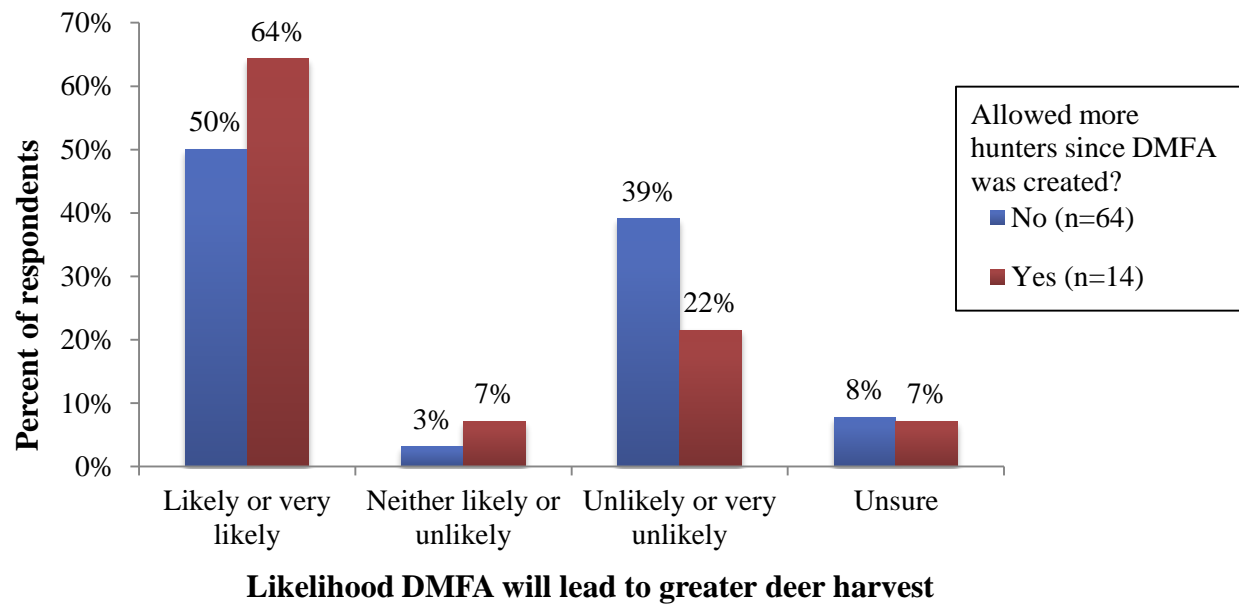
Attitude toward deer in Tompkins County	Deer population preference					
	Decrease (%)		Stay the same or increase (%)		Total (%)	
	Landowners (n=58)	Residents (n=388)	Landowners (n=39)	Residents (n=131)	All Landowners (n=100)	All Residents (n=570)
I have no particular feelings about deer	1.7	1.0	2.6	3.8	2.1	1.9
I enjoy deer AND I do not worry about problems deer cause	12.1	4.4	46.2	61.1	25.8	19.6
I enjoy deer BUT I worry about problems deer cause	62.1	76.3	51.3	31.3	57.7	65.1
I do not enjoy deer in Tompkins County	24.1	18.3	0.0	3.8	14.4	13.4

**Table 14.** Level of DMFA program awareness among landowners who allowed hunting and landowners who prohibited hunting.

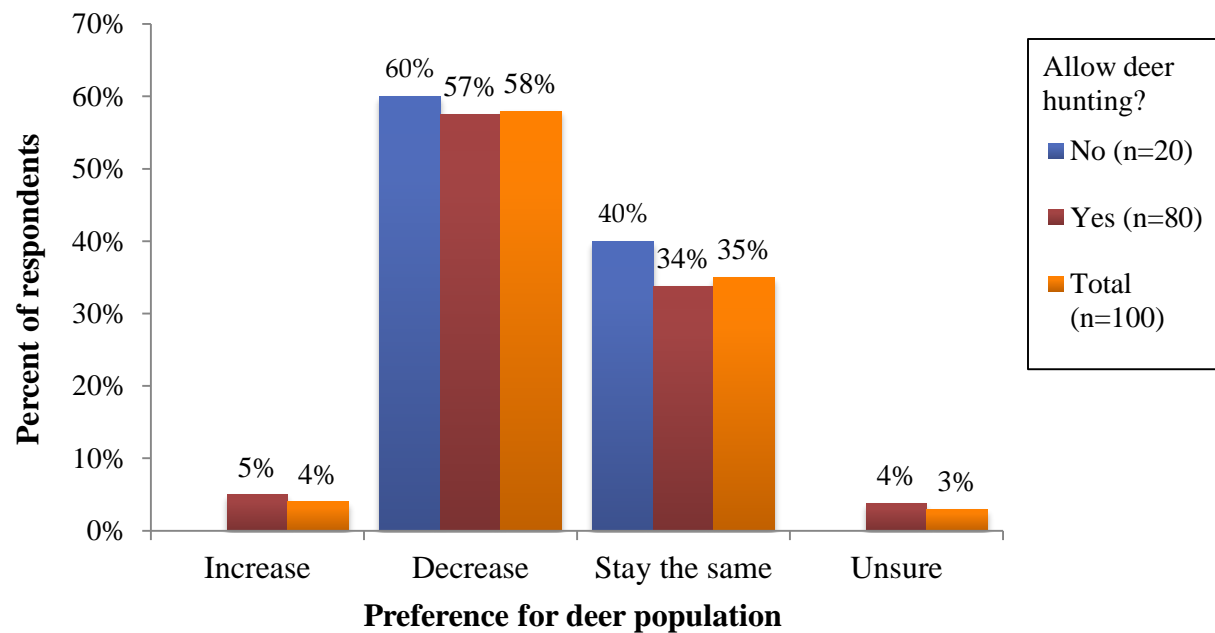
<b>Were you aware of the DMFA program before we called?</b>	<b>Do you allow any deer hunting on your lands?</b>		
	No (n=20) (%)	Yes (n=80) (%)	Total (n=100) (%)
No	75.0	45.0	51.0
Yes	25.0	55.0	49.0

**Table 15.** Opinions of the DMFA program among landowners and residents who were or were not aware of the DMFA program before being contacted for the study.

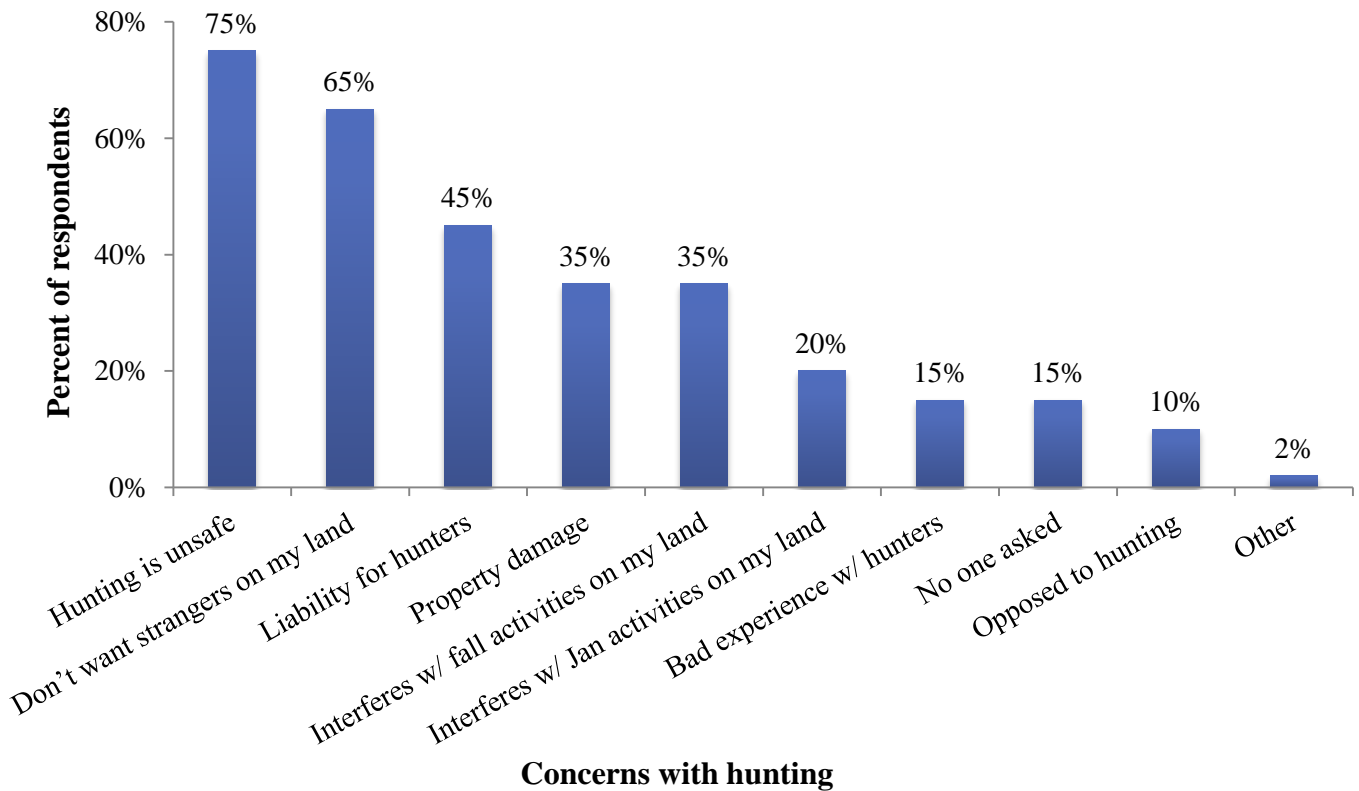
<b>Opinion of the DMFA</b>	<b>Were you aware of the DMFA program before being contacted?</b>					
	No (%)		Yes (%)		Total (%)	
	<i>Landowner (n=36)</i>	<i>Resident (n=263)</i>	<i>Landowner (n=44)</i>	<i>Resident (n=298)</i>	<i>Landowner (n=80)</i>	<i>Resident (n=561)</i>
Strongly favorable	19.4	28.9	36.4	37.9	28.7	33.7
Slightly favorable	36.1	18.6	43.2	21.8	40.0	20.3
Neutral	25.0	36.5	6.8	22.8	15.0	29.2
Slightly unfavorable	8.3	4.9	6.8	2.3	7.5	3.6
Strongly unfavorable	5.6	1.5	4.5	9.4	5.0	5.7
Unsure	5.6	9.5	2.3	5.7	3.8	7.5



**Figure 9.** Landowner judgments about the likelihood that the DMFA will lead to greater antlerless deer harvest on their land.



**Figure 10.** Landowners' preferences for the deer population on their land.



**Figure 11.** Reasons landowners do not allow deer hunting on their land.

Landowners who allowed deer hunting typically had just a few hunters on their land each year. The average number of hunters they allowed on their land in the previous 12 months (i.e., during the 2013/14 hunting license year) was 4 (range 1-30 hunters). Half of landowners had 3 or fewer hunters; 20% had more than 5 hunters on their lands in the previous 12 months (Table 16). The majority of landowners had hunters using their land during regular gun season (90%), early archery season (82%), late archery/muzzleloader season (64%), and the January season (53%). An average 3.23 antlerless deer were taken from each private parcel per year (range 0 to 35).

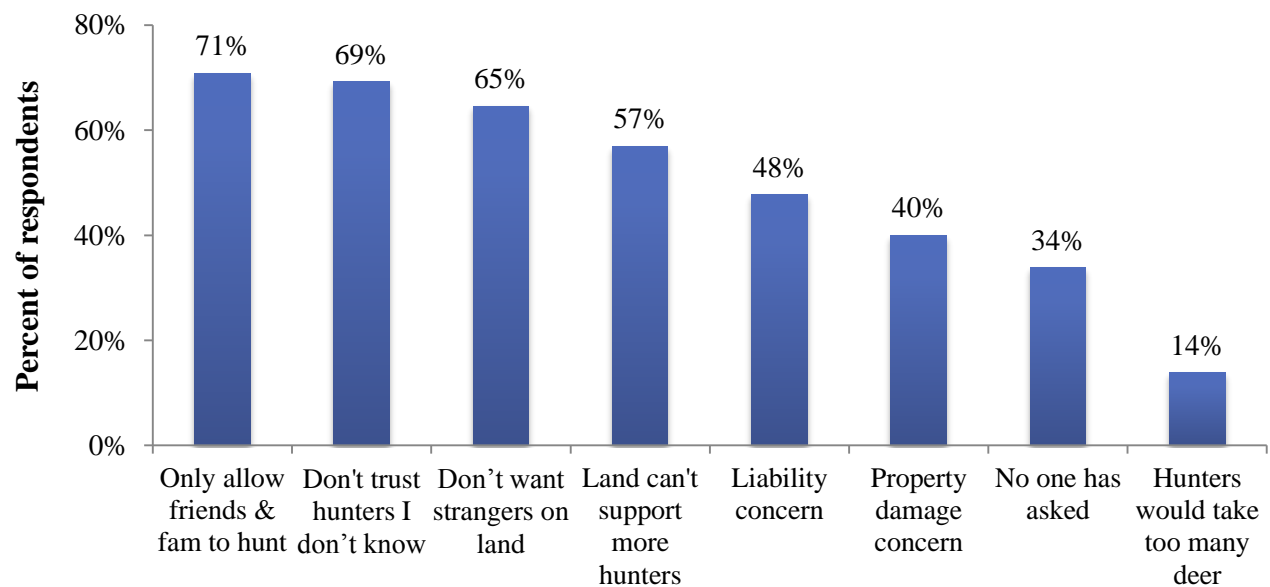
During the first two years of the DMFA program, only 19% of landowners who allowed deer hunting had permitted more people to hunt on their lands than they had allowed in 2011/12 (before the program began). The most common reasons for not allowing additional hunters on their lands included: reserving hunting privileges for friends and family (70.8%), lack of trust in unknown hunters (69.2%), wanting to keep strangers off the land (64.6%), and a belief that their property was not large enough to safely accommodate more hunters (Figure 12).



**Table 16.** Total number of deer hunters landowners had allowed on their land during the 2013/14 hunting license year.

Number of hunters in previous year	N <sup>1</sup>	%
0	5	6.3
1	15	19.0
2	11	13.9
3	11	13.9
4	10	12.7
5	11	13.9
6 to 10	13	16.4
11 or more	3	3.8

<sup>1</sup> Includes only landowners who permitted hunting on their land.



#### Reasons not to allow more hunters

**Figure 12.** Reasons landowners had not allowed more hunters on their land since the DMFA was created.

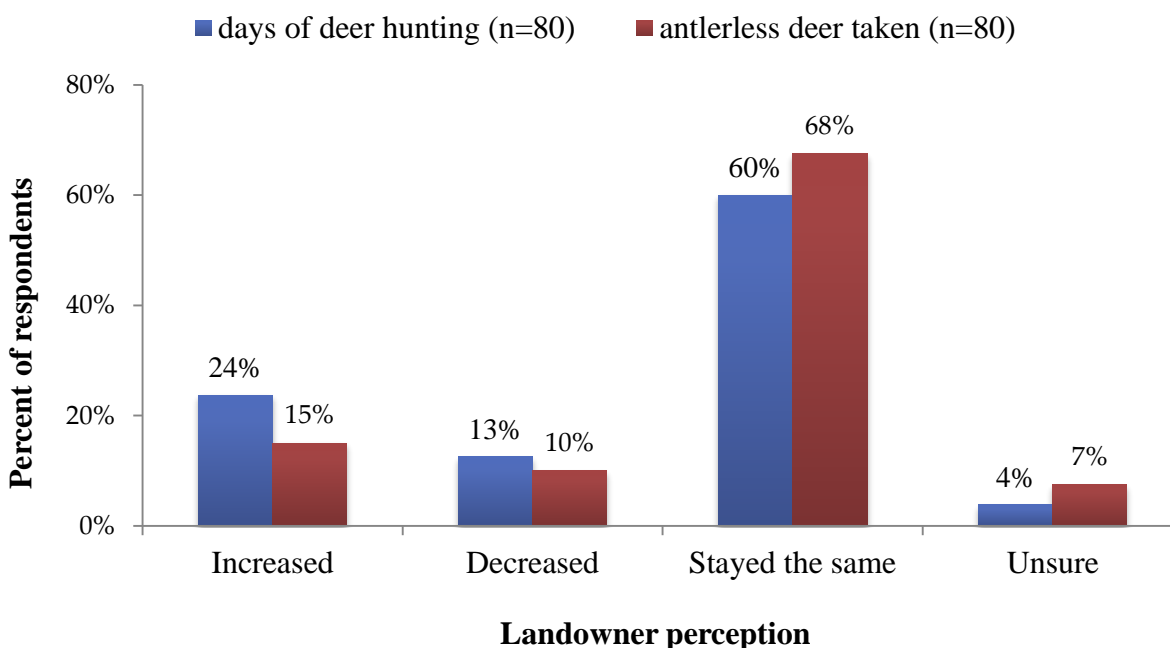
### Antlerless deer take reported by landowners

A majority of landowners reported that few antlerless deer are removed from their land in an average year (Table 17). Just over half (53%) of landowners estimated that hunters take 2 or fewer antlerless deer, and 70% estimated that hunters take 3 or fewer antlerless deer from their land in an average year (Table 17). Based on the proportion of responding DMFA landowners who said they do not allow hunting (20%), and the proportion of responding DMFA landowners who reported that no antlerless deer are taken from their land in an average year, we estimated that about 36% of all landowners remove no antlerless deer from their land in a typical hunting license year. Those landowners held 25.5% of all acreage in the sample.

A majority of landowners reported that the number of hunting days on their land and the number of antlerless deer taken from their land during first two years of the DMFA program remained about the same as they had been before the program was established (Figure 13). About one-quarter (23.7%) of landowners who allowed hunting said the number of hunting days had increased, but only 15% of landowners said the number of antlerless deer taken on their land had increased since establishment of the DMFA program. Among those who reported that antlerless deer take had increased, 33% attributed the increase to the January season and 33% attributed it to the higher bag limit.

**Table 17.** Number of antlerless deer that landowners believed hunters removed from their land in and average year.

Number of deer	n	%
0	17	22.7
1	11	14.7
2	12	16.0
3	13	17.3
4	9	12.0
5	2	2.7
6 to 9	11	10.6
10 or more	3	3.9



**Figure 13.** Landowner perceptions of the trend in number of days of deer hunting on their land and the number of antlerless deer hunters had taken from their land since the start of the DMFA program.

## Key Findings: Resident Survey

### Deer-related experiences and impact perceptions

Like landowners, residents living within the DMFA boundaries were concerned about and had experience with several negative deer-related impacts. Eighty percent or more of residents had moderate or high concern about deer-car collision and Lyme disease, and a majority also had moderate to high concern about deer damage to gardens and landscape plantings, forests, and crops (Table 11). Among the impacts listed, residents were most likely to have been affected by deer damage to gardens and landscape plants and deer-car collisions (Table 11). Sixty-five percent of residents worried about problems deer cause (Table 12) and 68% wanted to see the deer population in Tompkins County decrease (<3% wanted a population increase).

### Awareness of, attitudes toward and beliefs about the DMFA Program

About half (53%) of residents were aware of the DMFA before being contacted for the survey. A majority of residents approved of the DMFA program overall (Table 15); program approval was higher among residents who had previous awareness of the program (60% vs. 49%).

A majority of residents (54%) approved of creating a January deer hunting season in the DMFA (26% had a neutral opinion, 17% held an unfavorable opinion, and 3% were unsure of their opinion about the January season). We found no significant difference on this measure for residents with and without prior awareness of the DMFA program. A majority of residents (56%) approved of allowing DMFA hunters to take two antlerless deer per day within the area (Table 18). Residents who were aware of the program before being contacted were more likely than unaware residents to hold an unfavorable attitude toward permitting take of two deer per day (chi square = 24.809, df=5,  $P < 0.001$ ) (Table 18).

Just over half of residents agreed that deer were preventing regeneration of native plants. Seventy-two percent agreed that hunters were capable of reducing deer numbers, but fewer than half (48%) agreed that the DMFA program would reduce the deer population in Tompkins County.

We asked questions about residents' outdoor recreation to explore whether opinions of the DMFA program were more or less favorable among residents who use open space in Tompkins County for recreation other than deer hunting. We found that 43% of residents who walked/ran on local trails often or very often had a strongly favorable opinion of the DMFA, while 22% had a slightly favorable opinion of the program (Table 19). Of the residents who walked dogs in natural areas often or very often, 31% had a strongly favorable opinion of the DMFA, while 23% had a slightly favorable opinion of the program (Table 19). Very few residents used trails and other open space for walking, running or dog walking had an unfavorable opinion of the DMFA program.

**Table 18.** Opinions of allowing hunters to take two antlerless deer per day within the DMFA among residents who were or were not aware of the program before being contacted for the study.

<b>Attitude toward allowing take of 2 deer/day</b>	<b>Were you aware of the DMFA program before being contacted?</b>		<i>Total</i> ( <i>n</i> =559)
	<i>No</i> ( <i>n</i> =261)	<i>Yes</i> ( <i>n</i> =298)	
Strongly favorable	36.8	35.6	36.1
Slightly favorable	20.3	20.1	20.2
Neutral	26.4	18.5	22.2
Slightly unfavorable	6.5	8.1	7.3
Strongly unfavorable	5.4	16.4	11.3
Unsure	4.6	1.3	2.9

**Table 19.** A comparison of resident opinions of the DMFA program among residents who used trails and natural areas at different levels.

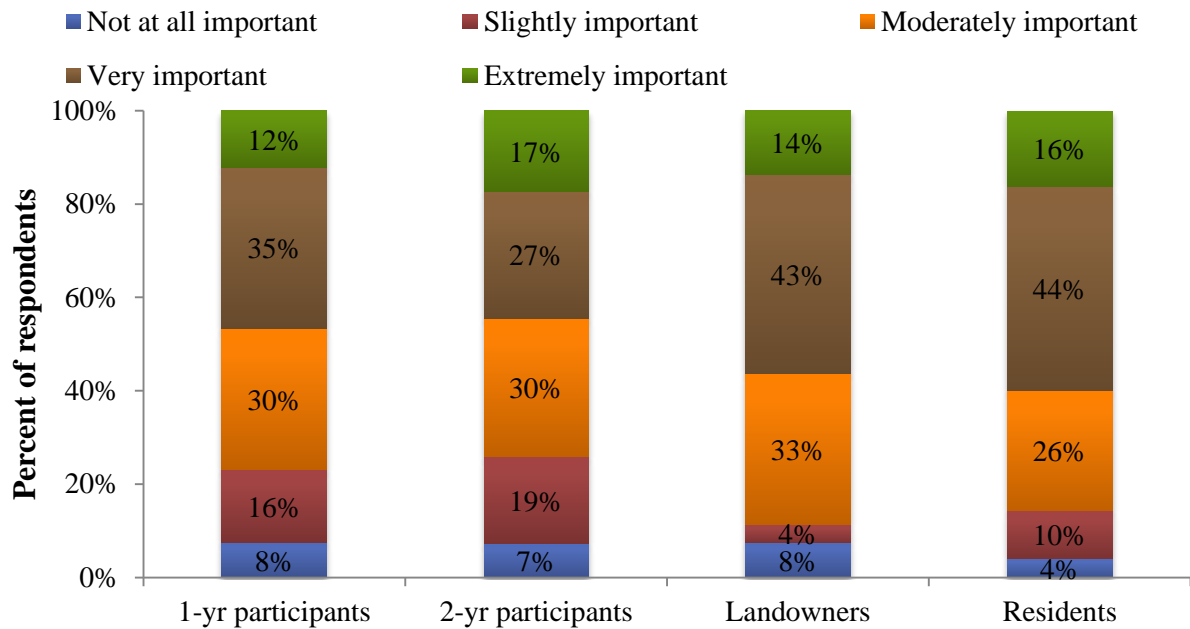
<b>Opinion of the DMFA</b>	<b>Land-use activity</b>					
	Walk/run on trails (%)			Walk dog in natural area (%)		
	<i>Never/ seldom (n=237)</i>	<i>Often/ Very often (n=238)</i>	<i>Total (n=525)</i>	<i>Never/ Seldom (n=384)</i>	<i>Often/ Very often (n=125)</i>	<i>Total (n=509)</i>
Strongly favorable	29.1	42.7	36.6	37.8	31.2	36.1
Slightly favorable	21.5	22.2	21.9	21.6	23.2	22.0
Neutral	39.7	25.0	31.6	30.5	35.2	31.6
Slightly unfavorable	4.6	3.1	3.8	4.2	2.4	3.7
Strongly unfavorable	5.1	6.9	6.1	6.0	8.0	6.5

### Perspectives on Public Involvement in Deer Management

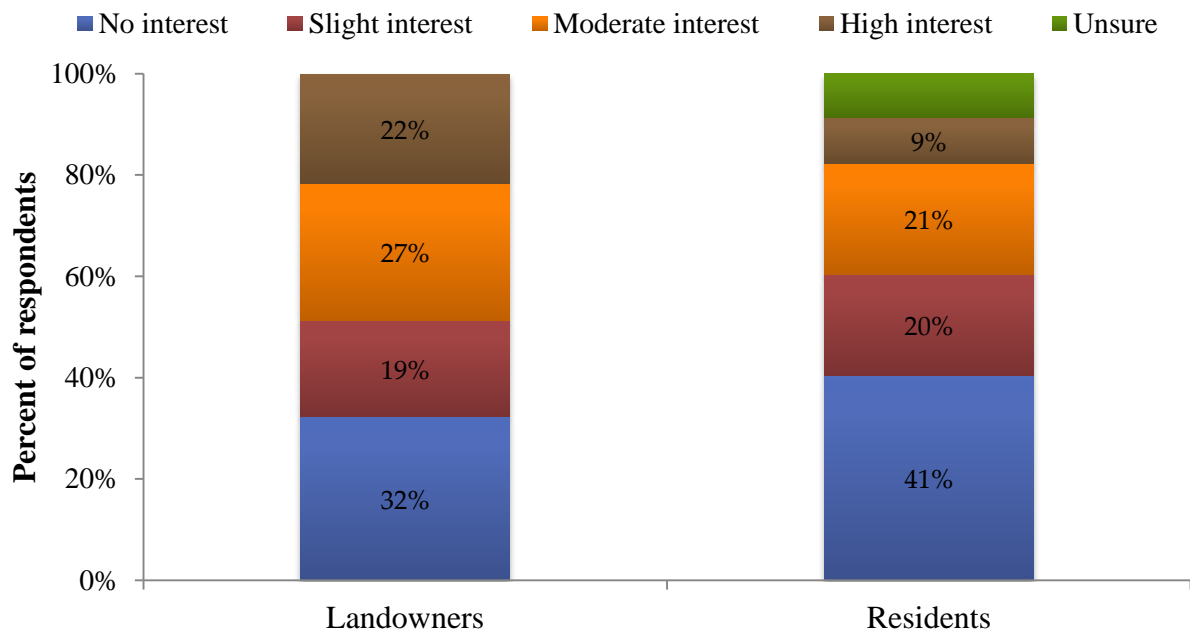
Most landowners, hunters, and residents favored public input to decisions about forming areas like the Central Tompkins County DMFA. However, landowners (67%) and residents (60%) were more likely than hunters (47% of 1-year participants; 44% of 2-year participants) to rate public input as very or extremely important (Figure 14). Two-year participants were more likely than 1-year participants to desire opportunities for input from select groups and invited individuals ( $\chi^2_1 = 9.38$ ;  $P = 0.002$ ), and also were more likely to be interested in personally providing input for creating special deer management units (41.6% vs. 24.6%,  $\chi^2_4 = 22.351$ ;  $P < 0.001$ ).

Although a majority of landowners and residents believed that public input should be considered, approximately half of all landowners (51%) and residents (61%) had no interest or slight interest in personally providing such input (hunters were not asked this question). Thirty-two percent of landowners and 41% of residents had no personal interest in providing input; 22% of landowners had high interest, while 9% of residents had high interest (Figure 15).

The most preferred means of providing input among landowners were completing mail or telephone surveys (57%) and attending public meetings open to all local residents (20.4%). Among residents and hunters, the most preferred means of providing input were public meetings open to everyone (66% of residents; 49% of hunters) and completing mail or telephone surveys (53% of residents; 39% of hunters) (Table 20).



**Figure 14.** Importance deer hunters, landowners, and residents placed on considering local input about programs like the DMFA.



**Figure 15.** Landowners' and residents' interest in providing input on the design of programs like the DMFA.

**Table 20.** Landowners', residents', and hunters' preferred means of providing input on design of programs like the DMFA.

<b>Input Methods</b>	<b>Landowners (%) (n=49)</b>	<b>Residents (%) (n=465)</b>	<b>Hunters (%) (n=442)</b>
Mail or telephone surveys	57.1	52.9	38.5
Public meetings open to all local residents	20.4	66.2	49.3
Meetings open to private landowners/select groups or invited individuals	14.3	16.1	21.5
A citizen committee representing a variety of interests	8.2	48.4	31.7
No public input should be used; let DEC use its judgment	N/A	8.0	15.6
Unsolicited comments from citizens (letters, telephone calls)	N/A	22.8	17.4

## SUMMARY AND CONCLUSIONS

The data we collected for this study will allow managers to examine their assumptions and expectations about the degree to which a DMFA program can help meet deer management goals.

Extrapolation from the hunter and landowner survey data suggest that harvest of antlerless deer within the DMFA increased markedly during the first year of program implementation (2012/13). In the second year of the program, the number of hunters who applied for a DMFA permit declined and the proportion of DMFA hunters who harvested an antlerless deer also declined. We estimate that the DMFA program resulted in an added harvest of two antlerless deer/mi<sup>2</sup> in the first year of the program, and an added harvest of less than one antlerless deer/mi<sup>2</sup> in the second year of the program. Those projections raise questions about whether the DMFA program in its current form will be effective as a means of deer population control or as a means of maintaining healthy and sustainable forests (goals 1 and 4 of the deer management program). Although the DMFA program yielded a substantial increase in harvest in year-1, such harvest may still be insufficient to reduce deer-related impacts across the entire DMFA (goal 3 of the deer management program).

We found some support for the assumption that hunters would be interested in participating in the DMFA program. The DMFA provides valued additional recreational hunting opportunity to a small number of (mainly local) NYS hunters (perhaps making a contribution toward goal 2 of the statewide deer management program). A small cadre of avid deer hunters is very interested in being in the field more days and hunting in January. Two-year participants, especially,

appreciated the added hunting opportunities that a DMFA permit provided. However, relatively few hunters were able to achieve their antlerless deer-harvest goals.

Hunting involvement has been conceptualized as a process that involves several stages, including awareness, interest, trial, continuation, and cessation (Decker and Purdy 1986, Wentz and Seng 2000, Larson et al. 2013). Program participation records, combined with data from this study, yield important insights about adoption of the Central Tompkins County DMFA program as a hunting opportunity. In 2012/13, 4,077 hunters registered to participate in the DMFA program. The number of registered DMFA hunters fell to 2,199 in the second year (2013/14), then increased to 2,626 in year three of the program (2014/15). DEC records indicated that 73% of DMFA registrants in 2014/15 were participating in the DMFA program for the first time (Hurst, DEC, personal communication). Those records indicate that 367 hunters obtained a DMFA permit in 2012/13, 2013/14, and 2014/15 (Jeremy Hurst, DEC, personal communication). Taken together, this information suggests that thousands of hunters now have passed through the awareness, interest, and trial phases of program adoption, but only a small group of hunters are repeat participants who could be described as being in the continuation phase of program adoption. Data from this study suggest that an inability to gain access to land, and failure to meet expectations about seeing and harvesting deer, may be important factors driving hunters in the trial stage to become program dropouts. The participation patterns observed to date suggest that hunter interest exceeds current capacity to accommodate more hunters within the DMFA, raising questions about how long the program will sustain the interest of large numbers of hunters.

The number of hunters in the program is currently limited by access to private lands for deer hunting. Substantial numbers of private landowners in the area have concerns about negative deer-related impacts. Nevertheless, most landowners do not allow new hunters to access their property, either because it would interfere with activities of friends and family, or because the landowner is concerned about the behavior of hunters they do not know or trust. We found little support for one of the key assumptions underlying the program—the assumption that many landowners would welcome new hunters to their land as a means of controlling deer numbers or deer-related impacts.

A small percentage of landowners allowed more hunting effort on their properties, and reported that the antlerless deer take on their land increased after the DMFA program was implemented. However, it appears that the program was not heavily used by landowners to address negative deer-related impacts on their land. Survey findings lead us to conclude that although many landowners expressed concern about negative deer-related impacts, their concerns about negative hunter-related impacts prevented them from allowing hunting or additional new hunters access to their land. This suggests that a majority of landowners placed less weight on primary impacts (e.g., negative effects on the landowner associated with the presence of deer) and more weight on collateral impacts (negative effects on the landowner associated with the presence of unknown/untrusted hunters attracted by the DMFA program).

Findings from the landowner survey clarify the structural limits of the Central Tompkins County DMFA program. Twenty percent of landowners allowed no hunting and only 19% of those who permitted hunting had increased the number of hunters they allowed on their land in response to the DMFA program. Additionally, on some lands where hunting was allowed, landowners reported that no antlerless deer were harvested in an average year. These findings suggest that



approximately one of every three landowners, representing about 25% of the acreage in the DMFA, were not removing any antlerless deer from the land they owned within the DMFA. Inability to reach deer on such lands will limit the potential of the program to serve as a deer population management tool.

We found evidence that most residents held neutral or favorable opinions about the DMFA program (though about half of all residents had little awareness of the program at the time data were collected). Those findings suggest that current views of residents do not represent an impediment to program success.

### Study limitations

Survey research offers a time-sensitive snapshot of viewpoints within a given population. Resident and landowner views may change as their familiarity with the program increases. Views of hunters, residents, and landowners also may differ by region of the state, so generalizations from one study should be made cautiously. Nevertheless, we believe the results of the surveys may be representative of other contexts where most of the private landowners have small parcels owned primarily for personal privacy and recreation.

### Next steps

Findings from this study suggest that private landowners are the gatekeepers who will determine the degree to which a DMFA-style program will result in control of deer populations in areas like Tompkins County. Ongoing public engagement efforts should focus on two-way communication with private landowners. Additional communication with landowners is needed to gain a richer understanding of their beliefs about the DMFA program (e.g., to learn why some landowners believed the program would increase antlerless deer harvest on their land and others did not). More communication with landowners also is needed to determine what, if any, modifications to the DMFA program could result in increased hunting effort and success on private lands. Possible program enhancements could include providing landowners with more information about potential liability protection or other concerns that affect their decisions about allowing access to deer hunters. Individual and small-group meetings with landowners may be the best means of gaining such insights about private landowners.

Efforts to communicate program outcomes, especially outcomes related to antlerless deer harvest, should be implemented to create accurate public perceptions of the program and the role it is expected to play in deer management plans for central New York.

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## APPENDIX A: HUNTER Survey instrument

### PART I: YOUR DEER HUNTING BACKGROUND

**1. About how many total years have you hunted** **deer in New York?** (*If none, write in "0".*) \_\_\_\_\_ years

**2. In 2013, did you go deer hunting in New York at least 1 time in the following seasons?**  
(*Please check [✓] all that apply.*)

- ☐ 2013 early archery season
- ☐ 2013 regular firearms season
- ☐ 2013 late muzzleloader/archery season

### PART II: YOUR DEER HUNTING IN THE TOMPKINS COUNTY DMFA

**Note:** Please refer to the enclosed map to see the boundaries of the Tompkins County Deer Management Focus Area (DMFA).

**3. Did you go deer hunting at least 1 time in 2011 or earlier, in the portion of Tompkins County that is now included in the Deer Management Focus Area (DMFA)?**

- ☐ Yes
- ☐ No

**4. Between October 2012 and January, 2014 (2012/13 and 2013/14) did you go deer hunting at least 1 time within the boundary of the Tompkins County DMFA?**

- ☐ Yes → IF YES, CONTINUE TO NEXT QUESTION
- ☐ No → IF NO, SKIP TO QUESTION #14

5. Please indicate whether you registered with the Tompkins County Deer Management Focus Area (DMFA) in the 2012/13 or 2013/14 hunting license years. (Check [✓] one box per row.)

	Yes	No
I <u>registered</u> for a Tompkins County DMFA permit to use in fall, 2012 or January, 2013	<input type="checkbox"/>	<input type="checkbox"/>
I <u>registered</u> for a Tompkins County DMFA permit to use in fall, 2013 or January, 2014	<input type="checkbox"/>	<input type="checkbox"/>

6. Please indicate the types of land on which you hunted deer within the boundaries of the Tompkins County DMFA. (Check [✓] one box per row.)

Within the DMFA boundaries:	Yes	No
I hunted deer on private land other than Cornell lands	<input type="checkbox"/>	<input type="checkbox"/>
I hunted deer on Cornell University lands	<input type="checkbox"/>	<input type="checkbox"/>
I hunted deer on New York State Parks land (i.e., Buttermilk Falls or Robert H. Treman parks)	<input type="checkbox"/>	<input type="checkbox"/>

7. Which of the following statements about hunting access were true for you in 2011, before the DMFA was established? (Check [✓] one box per row.)

	Yes	No
In 2011, I had access to hunt deer on private land that is now included in the DMFA	<input type="checkbox"/>	<input type="checkbox"/>
I was registered to hunt deer on Cornell University lands in 2011	<input type="checkbox"/>	<input type="checkbox"/>
I hunted deer in Buttermilk State Park in 2011	<input type="checkbox"/>	<input type="checkbox"/>
I hunted deer in Robert Treman State Park in 2011	<input type="checkbox"/>	<input type="checkbox"/>

8. Please indicate the number of days you went deer hunting AND the number of antlerless deer you took, within the boundaries of the Tompkins County DMFA during the last three hunting license years. (Write "0" if you did not hunt in the focus area that year, or you took no antlerless deer.)

Deer hunting seasons:	Number of days hunted inside DMFA boundaries	Number of antlerless deer you harvested <b>inside</b> DMFA boundaries	
A. Oct. 2011 – Dec. 2012	_____ days	_____	antlerless deer
B. Oct. 2012 – Jan. 2013	_____ days	_____	antlerless deer
C. Oct. 2013 – Jan. 2014	_____ days	_____	antlerless deer

9. Did you hunt deer at least 1 time during the 2014 January season in the Tompkins County DMFA?

☐ No

☐ Yes → What implements did you use when  
hunting in the 2014 January season?

(Check [✓] all that apply.)

- ☐ Shotgun
- ☐ Muzzleloader
- ☐ Bow and arrow

10. How did your experiences in the DMFA compare with your expectations in the last year that you hunted in the DMFA? (Check [✓] one response per row.)

Your hunting experiences in the last year you hunted in the DMFA	Better than I expected	About what I expected	Worse than I expected	Unsure
Number of deer encountered	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ease of getting access to private land	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**11. Please indicate how important each of the following is to you as reasons to hunt deer on lands inside the boundaries of the Tompkins County DMFA. (Check [✓] one response per row.)**

	Importance of this reason <u>to you</u>				
<b>Possible reasons for hunting deer on lands in the Tompkins County DMFA:</b>	Not at all important	Slightly important	Moderately important	Very important	Extremely important
Hunting in a place where I am likely to see deer and get shots at deer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Doing something outdoors where I can enjoy the natural environment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Helping to reduce the deer population in the DMFA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Having a chance to get venison to eat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Having a high chance of getting a deer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Spending time with friends and family	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Doing something that lets me get away from my everyday routine	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Helping to reduce the problems deer cause for people in the DMFA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sharing hunting activities with other people	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Doing something that helps me relax and refresh my mind	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Helping reduce damage to native plants caused by deer in the DMFA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Having a place to improve my hunting skills	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other (please describe):	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

12. Each person has their own personal reasons for applying for a DMFA permit. Please indicate how important each of the following reasons is to you. (Check [☐] one response per row.)

Possible reasons for applying for a Tompkins County DMFA permit:	Not at all important	Slightly important	Moderately important	Very important	Extremely important
Having more antlerless deer tags during the <u>regular firearms season</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Having more antlerless deer tags to use during the <u>early archery season</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Having more antlerless deer tags to use during the <u>late archery/ muzzleloader season</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Having a chance to obtain more venison	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Being able to hunt deer in the <u>January season</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Being allowed to hunt more days each year	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Having more time to hunt with friends, family	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Avoiding the \$10 fee to apply for a regular deer management permit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hunting in an area with a high deer population	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hunting in an area where private landowners are looking for more deer hunters	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reducing the deer population in the DMFA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



**13. Ideally, how many deer would you like to harvest next fall or winter (2014-15) in the Tompkins County DMFA?** *(Include antlered and antlerless deer in your count. Write in "0" if you do not want to take any deer next fall or winter.)*

Number of deer: \_\_\_\_\_

**14. Do you plan to apply for a Tompkins County DMFA permit to take antlerless deer in fall, 2014 or January, 2015?**

☐ Yes → **Do you intend to hunt deer during the January, 2015 season in Tompkins County?**

☐ Yes

☐ No

☐ No → **Which of the following are reasons why you may not apply for a DMFA permit next year?**

*(Check [✓] all that apply.)*

☐ Difficult to get access to private land in the focus area

☐ Negative experience with a landowner

☐ DMFA registration process is difficult

☐ DMFA requirement to complete an activity log is a burden

☐ The focus area is too far away from my home to be a convenient place to hunt

☐ I don't have time to hunt more often

☐ Not interested in hunting in January

☐ I can take as many antlerless deer as I want using other tags or hunting permits

☐ Conflicts with other hunters

☐ Did not see as many deer as I expected

☐ I don't think the deer population needs to be reduced any further

☐ Other (specify): \_\_\_\_\_

### PART III: YOUR VIEWS AND INTERESTS IN DEER MANAGEMENT IN THE TOMPKINS COUNTY DMFA

**15. Please indicate the extent to which you agree or disagree with the following statements.**

*(Check one response per row.)*

<b>Within the area designated as the Tompkins County DMFA ...</b>	<b>Strongly agree</b>	<b>Agree</b>	<b>Neither agree nor disagree</b>	<b>Disagree</b>	<b>Strongly disagree</b>
deer are preventing regeneration of native plants and trees	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
the deer population should be reduced	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
hunters are capable of reducing deer numbers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am willing to keep hunting after my personal venison needs have been met (i.e., continue to take and donate deer)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am willing to hunt in suburban areas where I might be visible to nonhunters	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I would be willing to hunt deer through <u>February</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I would support creation of a firearms season to take antlerless deer only in <u>September</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**16. How important is it to you that local input (e.g., input from local residents or local elected officials) be considered in decisions about creating special deer management areas like the one in Tompkins County? *(Please check [✓] one box.)***

- ☐ Not at all important
- ☐ Slightly important
- ☐ Moderately Important
- ☐ Very important
- ☐ Extremely important

**17. What methods would you like the New York State Department of Environmental Conservation (DEC) to use to gather public input to design special deer management areas like the one in Tompkins County?** *(Check [✓] all that apply.)*

- ☐ No public input should be used; let DEC use its judgment
- ☐ Unsolicited comments from citizens  
(letters, telephone calls)
- ☐ Meetings open to select groups and invited individuals
- ☐ Mail, web-based or telephone surveys
- ☐ Public meetings open to all
- ☐ Committee of citizens representing a variety of interests who work together to provide input on local deer management
- ☐ Others (Please specify: \_\_\_\_\_)

**18. How much personal interest do you have in providing input for the creation of special deer management areas like the one in Tompkins County?** *(Please check [✓] one box.)*

No interest	Slight interest	Moderate interest	High interest	Unsure
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

***THANK YOU FOR YOUR PARTICIPATION!***

*(Please use the space below, or enclose a separate sheet, to offer any comments you would like to make on the Tompkins County Deer Management Focus Area.)*

## APPENDIX B: Landowner interview instrument

Hello, my name is \_\_\_\_\_ and I'm calling from Cornell University. May I please speak to [RESPONDENT NAME HERE].

[WHEN APPROPRIATE PERSON TO INTERVIEW HAS BEEN LOCATED]:

Hi Mr./Ms. [RESPONDENT NAME HERE]. I'm calling you about a study of Tompkins County landowners that we are conducting for the New York State Department of Environmental Conservation. We are calling a sample of property owners in Tompkins County to ask them about their attitudes toward deer populations and deer hunting.

Would you be willing to take about 10 minutes right now to answer a few questions on this topic?

[IF NO, FIND OUT WHEN IT WOULD BE CONVENIENT TO CALL AGAIN.]

IF YES, PRESS ENTER TO BEGIN ...

Thank you!

The reason we are calling landowners in Tompkins County is because two years ago (in 2012), the state DEC initiated a program called the Tompkins County Deer Management Focus area, or DMFA, for short.

That program created a 60,000 acre zone in central Tompkins County, where hunters can obtain a permit to take up to 2 antlerless deer per day during regular hunting seasons, and during a special January hunting season.

**1. Before I called today, were you aware of the DMFA program in Tompkins County?**

0 No

1 Yes

**2. Do you own any land that is located within the boundaries of the Deer Management Focus Area in Tompkins County?**

0 No → → → IF NO, END THE INTERVIEW

1 Yes

2 I don't know → → IF NO, END THE INTERVIEW

If response is

"No" or "Don't know" → →

"That is all the questions we have for landowners with property outside the Deer management focus area. Thank you for your time."

*Now I'd like to ask a few questions about your property*

**3. How many parcels of 10 acres or more do you own inside the boundaries of the Tompkins County DMFA?**

\_\_\_\_\_ parcels [END INTERVIEW IF THEY ARE NOT A LANDOWNER, OR THEY SAY THEIR LAND IS OUTSIDE THE FOCUS AREA]

4. How many total acres of land do you own inside the boundaries of the Tompkins County DMFA? [\*Note: ONLY PARCELS OF 10 ACRES OR MORE, OUTSIDE OF THE TOWN OF ITHACA ARE COUNTED]

\_\_\_\_\_ acres

*Now I have a few questions about the uses of the land you own within the boundaries of the DMFA*

5. Do you live on the property seasonally or year-round?

0 No, I do not live on the property

1 Yes

6. Please answer “YES” if you use your land within the DMFA for the following purposes [CROPS INCLUDE FRUIT, VEGETABLES, GRAINS]

No	Yes	
0	1	6a. Growing agricultural crops or livestock
0	1	6b. Growing forest products
0	1	6c. Deer hunting by friends and family
0	1	6d. Other kinds of personal or family recreation
0	1	6e. Privacy or space around your home
0	1	6f. Investment or commercial purposes

7. Of the things I just mentioned, what is the most important use of your land within the DMFA

No	Yes	
0	1	6a. Growing agricultural crops or livestock
0	1	6b. Growing forest products
0	1	6c. Deer hunting by friends and family
0	1	6d. Other kinds of personal or family recreation
0	1	6e. Privacy or space around your home
0	1	6f. Investment or commercial purposes
0	1	6g. Other (describe): _____

*Ok, now I'd like to ask if you have any concerns about deer in central Tompkins County, within the boundaries of the Tompkins County DMFA. In each case I'll ask if you have no concern, low concern, moderate concern, or high concern about the topic mentioned.*

**8. How would you describe your level of concern about deer-car collisions in Central Tompkins County?**

- 1 No concern
- 2 Low concern
- 3 Moderate concern
- 4 High concern
- 5 Unsure

**9. What is your level of concern about deer-damage to field crops in central Tompkins County?**

- 1 No concern
- 2 Low concern
- 3 Moderate concern
- 4 High concerned
- 5 Unsure

**10. How much concern do you have about deer damage to gardens and plantings around people's homes in central Tompkins County?**

- 1 No concern
- 2 Low concern
- 3 Moderate concern
- 4 High concern
- 5 Unsure

**11. How much concern do you have about deer damage to natural plants and forests in central Tompkins County?**

- 1 No concern
- 2 Low concern
- 3 Moderate concern
- 4 High concern
- 5 Unsure

**12. How much concern do you have about Lyme disease in central Tompkins County?**

- 1 No concern
- 2 Low concern
- 3 Moderate concern
- 4 High concern
- 5 Unsure

**13. Have you been personally affected by any of the problems I just mentioned? [CHECK OFF ALL THAT APPLY]**

- ☐ 13a. Deer-car collisions
- ☐ 13b. Deer damage to field crops
- ☐ 13c. Deer damage to gardens and plantings around homes
- ☐ 13d. Deer damage to natural plants and forests (on their land)
- ☐ 13e. Lyme disease

**14. How important is it to you to reduce problems that deer cause on your land in Tompkins County?**

- 1 Not important
- 2 Slightly important
- 3 Moderately important
- 4 Very important
- 5 Unsure

**15. Which of the following statements reflects how you feel about deer in central Tompkins County?**

- 1 I have no particular feelings about deer
- 2 I enjoy deer, AND I do not worry about problems deer may cause
- 3 I enjoy deer, BUT I worry about problems deer may cause
- 4 I do not enjoy deer in Tompkins County

**16. On the land that you own inside the boundaries of the DMFA, would you like the deer population to increase, decrease, or stay about the same?**

- 1 Increase
- 2 Decrease
- 3 Stay about the same
- 4 Unsure

**[DEER HUNTING ON YOUR LAND QUESTIONS]**

*Now I would like to ask you a few questions about deer hunting on your land*

**17. Is your land in Tompkins County posted with signs to prohibit hunting?**

- 0 No
- 1 Yes

**18. Do you allow any deer hunting to take place on your land in Tompkins County?**

- 0 No (CONTINUE)
- 1 Yes → →SKIP TO QUESTION 20

**19. What would you say are the main reasons that you do not allow any deer hunting on your land in Tompkins County? [CODER –CHECK ALL THAT RESPONDENT MENTIONS]**

No      Yes

- |   |   |   |
|---|---|---|
| 0 | 1 | No one has asked to hunt deer on the property                           |
| 0 | 1 | Concern that hunting would be unsafe                                    |
| 0 | 1 | I had a bad experience with hunters in the past                         |
| 0 | 1 | Concern about property damage   |
| 0 | 1 | Concern about liability for hunters' injuries                           |
| 0 | 1 | Hunting would interfere with other <u>Fall</u> activities on my land    |
| 0 | 1 | Hunting would interfere with other <u>January</u> activities on my land |
| 0 | 1 | Don't want any strangers on my land                                     |
| 0 | 1 | I am opposed to hunting   |
| 0 | 1 | Other reason [WRITE IN]:  |
| 0 | 1 | Other reason [WRITE IN]:  |
| 0 | 1 | Other reason [WRITE IN]:  |

**[\*\*\*RESPONDENTS WHO ALLOW NO HUNTING SKIP TO DEMOGRAPHIC QUESTIONS]**

**20. Including yourself, how many people hunted deer on your land in Tompkins County in the last 12 months?**

Number of hunters = \_\_\_\_

**21. In which deer hunting seasons do you have deer hunters on your land within the DMFA? [CODER –CHECK ALL THAT RESPONDENT MENTIONS]**

- \_\_\_ Early archery season (in October)
- \_\_\_ Regular firearms deer season (in November)
- \_\_\_ late muzzleloader and archery season
- \_\_\_ Special January season in the focus area



**22. Since the Tompkins County focus area was created 2 year ago, have you allowed more people to hunt deer on your land within the DMFA?**

0 No (CONTINUE)

1 Yes →→ SKIP TO QUESTION 24

**23. What would you say are the main reasons that you have not allowed more people to hunt deer on your land within the DMFA? [CODER –CHECK ALL THAT RESPONDENT MENTIONS]**

No Yes

0 1 No new hunters have asked to hunt deer on the property

0 1 Safety concerns: Property not big enough to allow more hunters

0 1 I reserve hunting privileges for my friends and family

0 1 I would not trust hunters I don't know

0 1 I don't want any strangers on my land

0 1 Concern about property damage

0 1 Concern about liability for hunters' injuries

0 1 New hunters would remove too many deer

0 1 Other reason [WRITE IN]: \_\_\_\_\_

0 1 Other reason [WRITE IN]: \_\_\_\_\_

0 1 Other reason [WRITE IN]: \_\_\_\_\_

**24. Since the DMFA was created 2 year ago, do you think the total number of days hunted by all the hunters using your land, has increased, decreased, or stayed about the same?**

1 Increased

2 Decreased

3 Stayed about the same

4 Not sure

**25. In an average year, how many antlerless deer (does and fawns) do hunters harvest from your land in Tompkins County?**

Number of antlerless deer: \_\_\_\_\_

**26. Since the Tompkins County focus area was created 2 year ago, has the total number of antlerless deer taken on your land increased, decreased, or stayed about the same?**

- 1 Increased →→ **27B. Do you think that more antlerless deer are being taken**
- 2 Decreased **from your land because of the new January season, because**
- 3 Stayed about **hunters are allowed to take up to two antlerless deer per**  
the same **day, or some other reason?**
- 4 Not sure

- 1 Because of the January season
- 2 Because of higher bag limit
- 3 Other reasons
- 4 Not sure

**27. How likely is it that the longer hunting season and higher bag limit in central Tompkins County will lead to greater harvest of antlerless deer on your land in the future?**

- 1 Very likely
- 2 Likely
- 3 Neither likely or unlikely
- 4 Unlikely
- 5 Very unlikely
- 6 Unsure

**28. Would you agree or disagree with the following statement, “The DMFA program will help reduce the deer population in central Tompkins.”**

- 1 Agree (strongly)
- 2 Agree (slightly)
- 3 Neither agree nor disagree
- 4 Disagree (slightly)
- 5 Disagree (strongly)
- 6 Unsure

**29. Would you say that your overall opinion about the Tompkins County DMFA program is favorable, unfavorable, or neutral?**

- 1 Favorable (strongly)
- 2 Favorable (slightly)
- 3 Neutral
- 4 Unfavorable (slightly)
- 5 Unfavorable (strongly)
- 6 Unsure

*Now I have a couple of questions about public involvement in deer management decisions*

**30. How important is it to you that local input (e.g., input from local residents or local elected officials) be considered in decisions about creating special deer management areas like the one in Tompkins County?**

- 1 Not at all important →→→ IF NONE, SKIP TO QUESTION 33
- 2 Slightly important
- 3 Moderately important
- 4 Very important
- 5 Extremely important

**31. How would you describe your level of interest in providing input on the design of special deer management areas like the one in Tompkins County? Do you have...**

- 1 No interest →→→ IF "No interest," SKIP TO ITEM 33
- 2 Slight interest
- 3 Moderate interest, or
- 4 High interest
- 5 Unsure

**32. Which of the follow methods would be most attractive to you to provide input when special deer management areas are developed? (READ LIST AND SELECT THEIR MOST PREFERRED OPTION.)**

Would you most prefer to ...

- 1 Respond to mail or telephone surveys
- 2 Attend meetings open to private landowners
- 3 Attend public meetings open to all local residents
- 4 Or, serve on a citizen committee representing a variety of interests?

### **[DEMOGRAPHIC QUESTIONS]**

**Great! Just one more question.**

**33. In what year were you born?**

Year: 19 \_\_ \_\_

**34. Gender [NOTED BY INTERVIEWER; NOT A QUESTION]**

- 1 Male
- 2 Female

## APPENDIX C: Resident survey instrument

### PART I: AWARENESS OF THE TOMPKINS COUNTY DMFA

In 2012, the state DEC initiated a program called the Tompkins County Deer Management Focus area, or DMFA for short.

That program created a 60,000-acre zone in central Tompkins County, where hunters can obtain a permit to take up to 2 antlerless deer per day during regular hunting seasons, and during a special January hunting season.

**1. Before you received this questionnaire, were you aware of the DMFA program in Tompkins County?**

☐ Yes

☐ No

**Note:** Please refer to the enclosed map to see the boundaries of the Tompkins County Deer Management Focus Area (DFMA).

**2. Do you live within the boundaries of the DMFA program in Tompkins County?**

☐ Yes

☐ No

☐ Unsure

### PART II: YOUR CONCERNS ABOUT DEER

**3. The following is a list of deer-related problems that people may experience. Please indicate your level of concern about these possible problems in Central Tompkins County. (Check one response per row.)**

	No concern	Low concern	Moderate concern	High concern	Unsure
Deer-car collisions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Deer damage to field crops	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Deer damage to gardens and plantings around homes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Deer damage to natural plants and forests	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lyme disease	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**4. Please indicate whether you have been affected by any of the following problems. (Check all that apply.)**

- ☐ Deer-car collisions
- ☐ Deer damage to field crops
- ☐ Deer damage to gardens and plantings around homes
- ☐ Deer damage to natural plants and forests
- ☐ Lyme disease

**5. How important is it to you to reduce problems that deer cause in Tompkins County?**  
(Please check [✓] one box.)

- ☐ Not at all important
- ☐ Slightly important
- ☐ Moderately Important
- ☐ Very important
- ☐ Unsure

**6. Which of the following statements reflects how you feel about deer in central Tompkins County? (Please check [✓] one box.)**

- ☐ I have no particular feelings about deer
- ☐ I enjoy deer, AND I do not worry about problems deer may cause
- ☐ I enjoy deer, BUT I worry about problems deer may cause
- ☐ I do not enjoy deer in Tompkins County

**7. In Tompkins County, would you like the deer population to increase, decrease, or stay about the same? (Please check [✓] one box.)**

- ☐ Increase
- ☐ Decrease
- ☐ Stay about the same
- ☐ Unsure

### PART III: YOUR VIEWS ON DEER MANAGEMENT IN THE TOMPKINS COUNTY DMFA

- 8. Please indicate the extent to which you agree or disagree with the following statements.**  
(Check one response per row.)

Within the area designated as the Tompkins County DMFA ...	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
deer are preventing regeneration of native plants and trees	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
hunters are capable of reducing deer numbers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The DMFA program will help reduce the deer population	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- 9. Please indicate your opinion on the following aspects of the DMFA program.** (Check one response per row.)

Your opinion on ...	Strongly favorable	Slightly favorable	Neutral	Slightly Unfavorable	Strongly Unfavorable
Allowing hunters to take 2 antlerless deer per day	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Creating a January deer hunting season	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The DMFA program overall	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**10. How important is it to you that local input (for example, input from local residents or local elected officials) be considered in decisions about creating special deer management areas like the one in Tompkins County?** *(Check [✓] one box.)*

- ☐ Not at all important
- ☐ Slightly important
- ☐ Moderately Important
- ☐ Very important
- ☐ Extremely important

**11. What methods would you like the New York State Department of Environmental Conservation (DEC) to use to gather public input to design special deer management areas like the one in Tompkins County?** *(Check [✓] all that apply.)*

- ☐ No public input should be used; let DEC use its judgment
- ☐ Unsolicited comments from citizens  
(letters, telephone calls)
- ☐ Meetings open to select groups and invited individuals
- ☐ Mail, web-based or telephone surveys
- ☐ Public meetings open to all
- ☐ Committee of citizens representing a variety of interests who work together to provide input on local deer management
- ☐ Others (Please specify: \_\_\_\_\_)

**12. How much personal interest do you have in providing input for the creation of special deer management areas like the one in Tompkins County?** *(Please check [✓] one box.)*

No interest	Slight interest	Moderate interest	High interest	Unsure
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

#### PART IV: BACKGROUND INFORMATION

(Please remember that all your responses are confidential)

**13. Are you . . . . ?**

☐ Male

☐ Female

**14. In what year were you born? (Fill in the blank.)**

**19**\_\_\_\_\_

**15. Do you own 10 or more acres of land within the boundaries of the Tompkins County DMFA?**

☐ Yes

☐ No

☐ Unsure

**16. How often did you engage in the following types of outdoor recreation in Tompkins County last year? (Check [✓] one box per line.)**

	Never	Seldom	Often	Very often
Walking/running local trails	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dog walking in natural areas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cross-country skiing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Mountain biking	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Camping	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Birdwatching	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Deer hunting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Small game/bird hunting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**THANK YOU FOR YOUR PARTICIPATION!**

(Please use the space below, or enclose a separate sheet, to offer any comments you would like to make on the Tompkins County Deer Management Focus Area.)



# APPENDIX D: HUNTER respondent–nonrespondent comparison tables

**Table D1.** Outcome of telephone contacts with survey nonrespondents.

Outcome	Total
Completed survey	50
Bad phone number – Not in service	17
Too ill/ Deceased	1
Pending – Called less than 6 times without resolution	131
Total	199

**Table D2.** Mean hunting history and interests between non-respondents and respondents.

	Non-respondents (1-year participants)			Respondents (1-year participants)				
	n	Yes (%)	No (%)	n	Yes (%)	No (%)	$\chi^2$	P-value
<i>Seasons hunted in 2013</i>								
Early archery season	50	60.0	40.0	292	74.7	25.3	4.602	0.032
Regular firearms season	50	88.0	12.0	292	91.1	8.9	0.482	0.487
Late muzzleloader/archery season	50	54.0	46.0	292	65.4	34.6	6.607	0.010
<i>DMFA participation</i>								
Hunted in DMFA lands prior to 2011	50	50.0	50.0	292	41.8	58.2	2.043	0.152
Hunted in DMFA between Oct 2012-Jan 2014	50	82.0	18.0	289	92.0	8.0	5.028	0.025
Plan to apply for a DMFA permit in 2014-15	50	54.0	46.0	272	61.0	39.0	0.869	0.351
<i>Land hunted within DMFA</i>								
Private land, not Cornell	41	68.3	31.7	225	60.0	40.0	1.005	0.316
Cornell	41	26.8	73.2	207	28.5	71.5	0.047	0.828
NYS Parks land	41	39.0	61.0	220	42.3	57.7	0.150	0.699
Had access to DMFA lands prior to 2011	41	48.8	51.2	234	41.0	59.0	0.860	0.354

**Table D3.** Reasons hunters may not apply for a DMFA permit next year, means compared between non-respondents and respondents.

	Non-respondents			Respondents			$\chi^2$	P value
	n	Yes (%)	No (%)	n	Yes (%)	No (%)		
Access to private land is difficult	23	52.2	47.8	107	56.1	43.9	0.117	0.733
Negative experience with landowner	23	0.0	100.0	107	9.3	90.7	2.329	0.127
DMFA registration is difficult	23	8.7	91.3	107	5.6	94.4	0.313	0.576
Burden of activity log	23	13.0	87.0	107	14.0	86.0	0.015	0.902
Focus area is too far from my house	23	56.5	43.5	107	37.4	62.6	2.871	0.090
No time to hunt more often	23	26.1	73.9	107	13.1	86.9	2.459	0.117
Not interested in January hunting	23	8.7	91.3	107	14.0	86.0	0.472	0.492
I can take antlerless deer w/ other tags/permits	23	26.1	73.9	107	5.6	94.4	9.476	0.002
Conflicts with hunters	23	21.7	78.3	107	12.1	87.9	1.459	0.227
Did not see as many deer as I expected	23	65.2	34.8	107	45.8	54.2	2.857	0.091
Deer population doesn't need reducing	22	31.8	68.2	107	16.8	83.2	7.240	0.027

**Table D4.** Mean number of antlerless deer taken compared between non-respondents and respondents.

	Oct 2011-Dec 2012 <sup>a</sup>		Oct 2012-Jan 2013 <sup>b</sup>		Oct 2013-Jan 2014 <sup>c</sup>	
	Non-respondents (%)	Respondents (%)	Non-respondents (%)	Respondents (%)	Non-respondents (%)	Respondents (%)
# deer	n=41	n=184	n=41	n=235	n=41	n=190
0	78.0	83.7	78.0	76.6	87.8	87.9
1	12.2	8.2	7.3	11.1	4.9	6.8
2	4.9	6.5	9.8	8.1	7.3	3.2
3	4.9	1.1	4.9	1.3	0.0	1.1
4				1.7	1.1	
5				0.4		
6				0.4		
7		0.5				
15				0.4		

<sup>a</sup> t=-0.607, df=223, p=0.545    <sup>b</sup> t=0.344, df=274, p=0.731    <sup>c</sup> t=0.093, df=229, p=0.926

**Table D5.** Mean hunting experience satisfaction between non-respondents and respondents.

	<b>Number of deer encountered in DMFA in the last year<sup>a</sup></b>				<b>Ability to access private land in DMFA in last year<sup>b</sup></b>			
	Non-respondents		Respondents		Non-respondents		Respondents	
	n	%	n	%	n	%	n	%
Better than expected	7	17.1	19	7.9	4	9.8	12	5.3
About what you expected	9	22.0	81	33.8	23	56.1	65	28.6
Worse than expected	24	58.5	123	51.2	13	31.7	94	41.4
Don't know	1	2.4	17	7.1	1	2.4	56	24.7

<sup>a</sup>  $t=0.102$ ,  $df=279$ ,  $p=0.919$     <sup>b</sup>  $t=2.725$ ,  $df=266$ ,  $p=0.009$

# APPENDIX E: RESIDENT RESPONDENT-NONRESPONDENT COMPARISON TABLES

**Tables R1-4.** Results of Chi-square tests of non-respondents and respondents questions

Table R1	Non-respondents			Respondents			$\chi^2$	P value
	n	Yes (%)	No (%)	n	Yes (%)	No (%)		
Aware of DMFA program	75	61.3	38.7	421	42.5	57.5	9.009	<b>.003</b>
Affected by deer-car collisions	75	48.0	52.0	421	55.1	44.9	.844	.358
Affected by deer damage to gardens and plantings around homes	75	68.0	32.0	421	77.0	33.0	1.989	.158
Affected by deer damage to natural plants and forests	75	20.0	80.0	421	27.6	72.4	1.499	.221
Affected by Lyme disease	75	21.3	78.7	421	24.2	75.8	.215	.643
	n	Male (%)	Female (%)	n	Male (%)	Female (%)	$\chi^2$	P value
Gender	75	48.0	52.0	387	56.1	43.9	.716	.398

Table R2	Non-respondents				Respondents				$\chi^2$	P value
	n	Yes (%)	No (%)	Unsure (%)	n	Yes (%)	No (%)	Unsure (%)		
Own 10 or more acres of land in DMFA	75	8.0	78.7	13.3	390	10.8	88.7	0.5	49.513	<b>&lt;.001</b>

Table R3	Non-respondents					Respondents					$\chi^2$	P value
	n	Increase (%)	Decrease (%)	Stay the same (%)	Unsure (%)	n	Increase (%)	Decrease (%)	Stay the same (%)	Unsure (%)		
Deer population preference	75	2.7	65.3	22.7	9.3	417	3.1	73.1	15.8	7.9	35.810	<b>&lt;.001</b>

Table R4	Non-respondents (%)					Respondents (%)					$\chi^2$	P-value
	n	None	Enjoy, no worries abt problems	Enjoy, worry abt problems	Don't enjoy	n	None	Enjoy, no worries abt problems	Enjoy, worry abt problems	Don't enjoy		
Feelings about deer	74	1.4	24.3	60.8	13.5	417	3.1	15.8	73.1	7.9	5.188	.159

Table 2. Results of t-tests between respondents and non-respondents, resident survey.

	Respondents $\bar{x}$	Non-respondents $\bar{x}$	t	df	p-value
<i>Deer and deer damage</i>					
Concerned about deer-car collisions	3.53	3.05	5.224	559	<.000
Concerned about gardens/plantings around the home	3.13	2.61	3.747	92.073	<.000
Concerned about natural plants and forests	2.98	2.77	1.245	87.599	.216
Concerned about Lyme disease	3.49	3.25	2.295	558	.022
How important is it to reduce deer problems in Tompkins Co?	3.26	2.97	1.964	87.429	.053
<i>DMFA program</i>					
DMFA will help control deer in Tompkins County	2.33	3.57	-5.385	79.012	<.000
Opinion on allowing hunters to take 2 antlerless deer	2.10	2.76	-3.956	565	<.000
Opinion on creating January deer hunting season	2.29	2.63	-1.897	566	.058
Overall opinion on DMFA program	2.07	2.83	-3.771	84.126	<.000
<i>Public involvement in deer mgmt. decisions</i>					
Interest in providing input on DMFA program design	2.56	2.01	3.257	91.256	.002
<i>Land use - How often do you:</i>					
Walk or run on local trails	2.90	2.28	4.861	92.451	<.000
Walk a dog in natural areas	1.86	1.55	2.508	106.144	.014
Go deer hunting in Central Tompkins County	1.27	1.13	1.968	126.754	.051
<i>Demographics</i>					
Year of birth	1955	1954	.868	523	.386

## APPENDIX F: OPEN-ENDED HUNTER RESPONDENT COMMENTS

**Table F1.** Hunter comments grouped into content categories.

<b>Comment category</b>	<b>n</b>
Access to private lands is an impediment	16
Comments about all other impediments to involvement in the DMFA program (e.g., not seeing enough deer to make it worthwhile, non-hunters using trails in state parks moves deer away, etc.)	30
Suggestions of things DEC could do to improve the program	30
Elements that make the program attractive (e.g., being able to hunt in January)	13
Other desired changes in deer hunting regulations	3
All other comments	5
<b>Total</b>	<b>97</b>

**Table F2.** “Other” reasons hunters hunt deer within the DMFA (includes only reasons not captured in closed-ended items)

<b>Comment Category</b>	<b>n</b>
Additional opportunities to hunt (especially January season)	6
Hunting close to home	5
Hunting in a new place	4
Better access for bow hunters	3
Have more time to hunt (e.g., retired, not working)	2
I have permission from private landowner to hunt there	2
Trophy buck possibility	2
Providing data for deer research	2
Prevents trespassing (landowner hunter)	1
Provides a safe place to hunt	1
Hunting in warm weather	1
Having a place to hunt for free	1
Helps the economy	1
Reducing tick populations	1

**Table F3.** “Other” reasons why hunters may not apply for a DMFA permit in future years (includes only reasons not captured in closed-ended items).

<b>Comment</b>	<b>n</b>
Moved away from NY; Don't hunt in NY anymore	7
Too many people on state land	4
Couldn't find public land to hunt; unclear where to hunt	4
Concerns about taking deer in January (e.g., should not harvest bucks by mistake; should not take pregnant deer)	3
Deer are in populated areas, not where hunters are allowed	2
Prefer to hunt in other places	1
Overpopulation of deer is in Cayuga Heights, but can't hunt there	1
I am not able to hunt (health constraints)	1
It depends on how I feel at the time	1
Locals are jerks who harass hunters	1
Don't want to be a mercenary for the purpose of herd reduction	1
Don't need the meat; difficulty finding people to take the meat	1
Bad experience (harassed by ECO who thought I was doing something wrong)	1
May not hunt unless area is expanded to entire county and allows use of rifles	1
Do not want to go through the Cornell Earn a Buck program registration	1

**Table F4.** Impediments to hunter involvement in DMFA program, or impediments to success of DMFA program as a deer management approach.

<b>Comment</b>	<b>n</b>
Gaining access to private land within the DMFA is difficult	16
500-foot rule prevents me from hunting where the deer are (i.e., in developed areas)	5
Hunted in a state park and was disappointed (e.g., saw no deer; saw too many other hunters; non-hunters on trails push deer out of parks); will not participate again	5
Disappointed that state park lands were small and mostly off limits to hunters	3
Discouraged that hunters are not allowed into areas with the highest deer numbers	3
Did not see any deer when hunting in the area	2
Believe the deer immediately leave the DMFA lands once shooting starts	2
Now believe the deer population has decreased and cannot support DMFA program	2
Don't want hunters to kill bucks that have dropped their antlers	2
Unaware of that the program existed or that permits were available	2
I own land in another County and can take as many deer as I need there	1
There are too many people hunting in a small area	1
Program seemed unorganized	1
I am opposed to hunting deer in January (don't want to harm developing fawns)	1
I live too far from the area to continue going there	1
The perceived deer overpopulation is a myth perpetuated by Cornell so that their campus plants will be protected	1
January weather is too cold for hunting	1
The program puts too much harvest pressure on deer in unit 7R	1
Frustrated with the process to hunt on Cornell lands	1